Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
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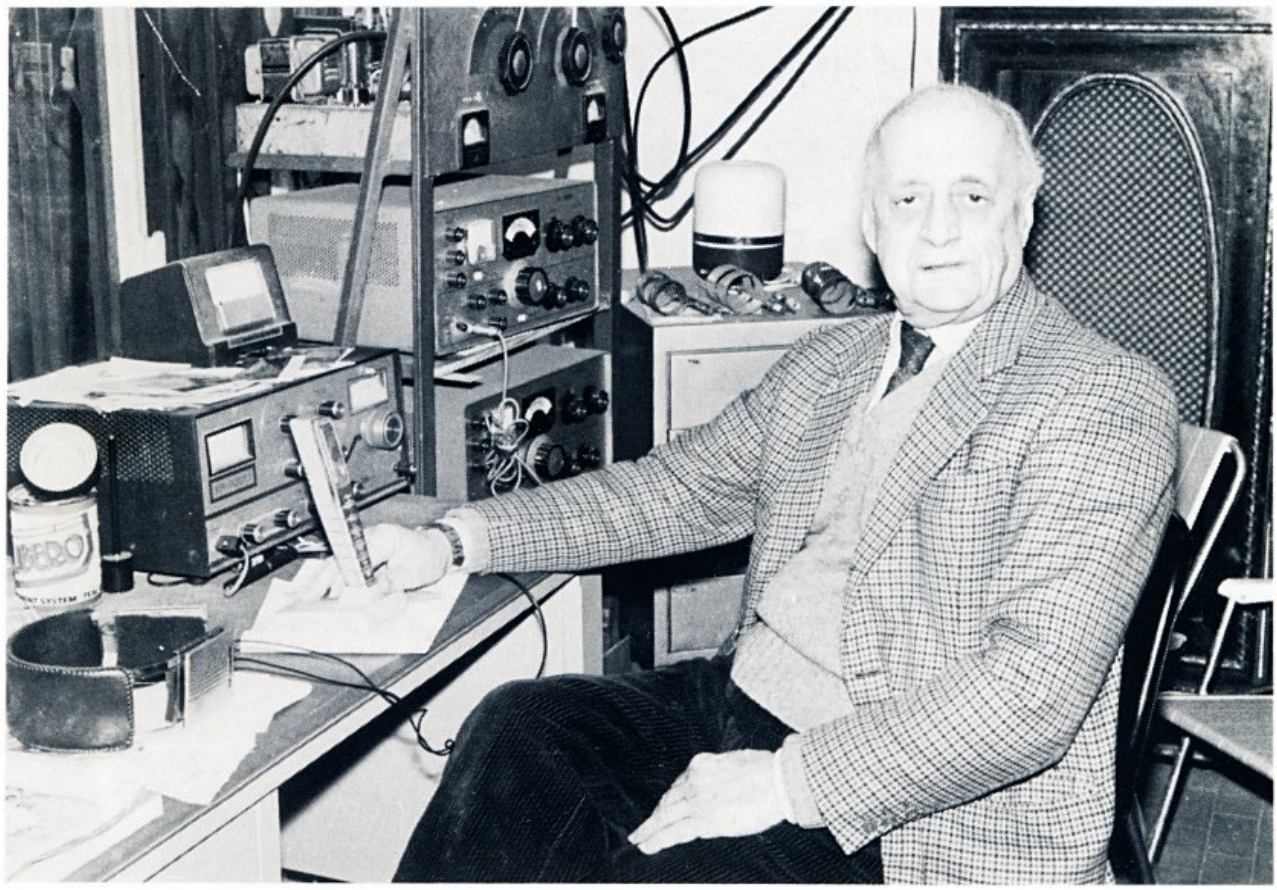

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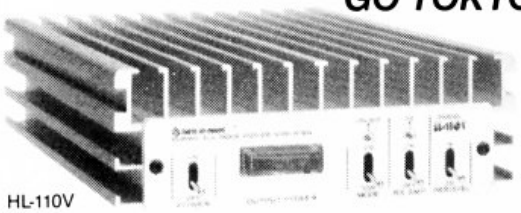

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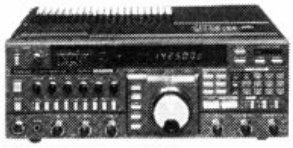

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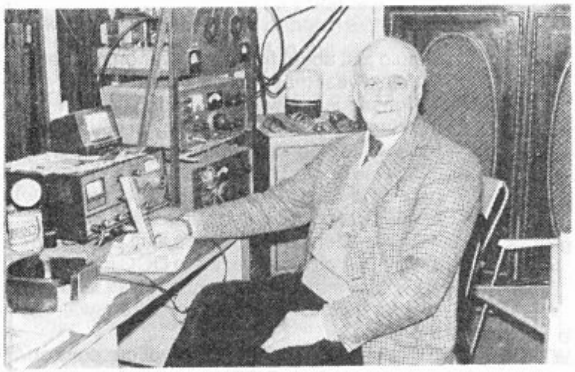

FRONT COVER: Ferruccio Crespi I2SM, Engineer and Radio Amateur with his radio equipment in Brunello, Varese (see page 3).

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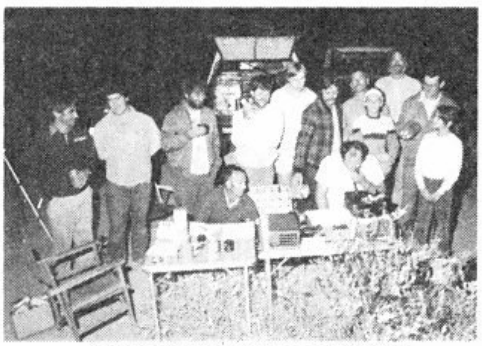
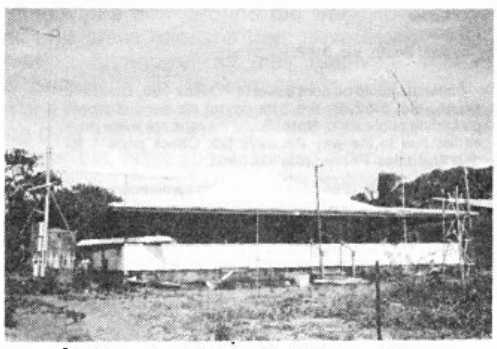


Radio QTH on Prince of Wales Island (see page 18).



Karratha Radio Club (see page 54).

Wrong caption.
QTH of Bill VK4WL
Prince of Wales Island.

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DEADLINE

All copy for inclusion in the January 1988 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, November 9, 1987.

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Caulfield South, Vic. 3162.

Material should be sent direct to **PO Box 300, Caulfield South, Vic. 3162,** by the 20th day of the second month preceding publication. **Note:** Some months are a few days earlier due to the way the days fall. Check page 1 for deadline dates. **Phone: (03) 528 5962.**

HAMADS should be sent direct to the same address, by the same date.

Acknowledgment may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

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Editor's Comment

HANDBOOK AND CALL BOOK

Something like a year ago (last December to be precise) we announced we were planning to produce a collection of specifically VK-oriented technical material, possibly in a loose-leaf format which could be updated from time to time. We went to the trouble of running a questionnaire on what you would like to see in such a handbook, and particularly whether you would be willing to pay extra for it.

The response was very gratifying. Thousands of replies, virtually all enthusiastic, and most of them willing to pay. Nothing has happened! We applaud your patience, because no one has yet asked "Where is the new Handbook?". Nevertheless, explanation is needed, although you may have found a hint in previous editorials. The problem is that at present we don't have the money to make a start! This is mainly because of rapidly rising costs and rapidly falling advertising. We have changed AR to less expensive paper and reverted to a minimal-colour cover; and with a few other economies we should just about finish the year on budget. But next year may well be worse!

Consequently, we are marking time on the Handbook. However, many of you may have wondered as to when there will be a 1987 Call Book. The answer is "There won't be!". And oddly enough, this is not entirely because of costs. The basic reason is that we have been publishing the Call Book ever since 1954 as a contractor to DOC (or DOTC now). The most recent contract was for a 10-year period, and came up for renewal this year.

For various reasons, all out of our control, the contract has yet to be renewed. It is now too late to produce a 1987 Call Book. Even if there had been no delay, costs would probably have bothered us anyway. Hopefully, we will be back in this business for 1988. Sorry, folks; we know the 1986 book is a bit out of date now, but it is better than nothing, isn't it?

Bill Rice VK3ABP
Editor

56th Anniversary of Talking to the World

FERRUCCIO CRESPI I2SM, from Milan, Italy, well-known in surrounding cultural circles, has a villa in Brunello close to Lake Varese and at the feet of the Italian Alps. The world is at his finger-tips. Well-known also to many Australian amateurs, he extends his greetings to all of them through this article.

Ferruccio is one of the few active Italian radio amateurs who can boast of being the most 'senior.' He has been sending his messages via radio around the world for 56 years. Transmitting defiantly during the time of Fascism in the 1930s and continuing into the post-war period, still today, every weekend, he leaves Milan to arrive in his oasis in Varesotto and throws himself into his immense world of voices.

Ferruccio 's life reads like a novel, with many chapters spent "riding the shortwaves." He remembers, for example, the day in 1962 when he was able to 'rescue' 50 passengers on a plane, which had a malfunctioning radio, by connecting the radio amateur pilot with Lisbon. He also recalls that, in 1980, thanks to a radio amateur on the island of Comore, he was able to, at the request of the Duke of Aosta, communicate a message to the niece of Queen Elena, of Rumania, to go immediately to Geneva to visit her sick grandmother.

"It was really the radio amateurs of those times", he remembers, "that carried out the first experiments with television." "I tried and had excellent results, and by using the Nipkov system, I was able to receive transmissions from London and Berlin in 1932."

During the 1930s, radio amateurs came under government control, the pioneer period was over and there was hope for a better understanding amongst the people of the world. Only in Italy, after a brief period of freedom, from 1920 to 1926, their licences were not renewed and the work was carried out clandestinely.

Ferruccio's work was interrupted many times due to sequestration, injunctions, fines and even interrogation by police. Then, at the war's end, radio amateurs brought their work back out of the cupboards to begin again.

As a founding member of the Association of Italian Radio Amateurs (ARI), of Varese. He now meets regularly with younger colleagues, placing his experiences at their disposition, believing firmly in the liberty and solidarity of this activity projected into the future.

—Contributed by Milvio Mondolo VK2AML

FEDERAL NEWS

During September, 1987, the Federal Office saw two meetings — an Executive Meeting, and a Publications Committee Meeting, had the subscription notices printed with the Bandcard/Mastercard/Visa facilities incorporated in the wording, has been the scene of our computer experts adjusting the subscription pay-in format to accommodate these card facilities, and we received congratulations on our 75th Anniversary!

The Executive Meeting took place on Tuesday, September 22.

The Agenda Items for this meeting were:

Acquisition of Amateur Radio Limited
Discussion of Novices and two metres
Special calls signs for the Bicentenary
Production of *Amateur Radio*
Reports — Standards, FTAC, Finance, etc.

The meeting was attended by David Wardlaw VK3ADW, Federal President in the Chair, Bill Roper VK3ARZ, Peter Gamble VK3YRP, Michael Owen VK3KI, and Allan Foxcroft VK3AE.

Apologies were received from Bill Rice VK3ABP, Ross Burstal VK3CRB, Ron Henderson VK1RH, and Stephen Phillips VK3JY. Mrs Ann McCurdy was in attendance.

Minutes of the Meeting held on August 25, were read and confirmed.

AMATEUR RADIO LIMITED

Federal Executive is acquiring this Company from the VK3 Division, after all necessary actions have been complied with.

SPECIAL CALL SIGNS FOR THE BICENTENARY

The Special Call VI88 has been requested from the International Telecommunications Union through the Department of Transport and Communications, in Canberra. Also requested was VI88WIA, and the Divisions can use VI88ACT, VI88NSW, VI88QLD, etc, for the whole year.

NOVICES ON TWO METRES

The results of the Divisional surveys, and individual letters on the subject, have been forwarded to the *Future of Amateur Radio Working Party* for collation and comment. This Committee has been asked for a brief report prior to the next Executive Meeting.

FINANCE

Accounts were presented and passed for payment, and the debtors to the end of August were noted.

STANDARDS

Allan Foxcroft discussed the two-day meeting of the TE3 Committee, and the delays still occurring in the secretarial area of the Association. He noted that we are still awaiting response to our letter to DOTC re Wireless Video Transmitters.

Allan also noted a disappointing response to our request for assistance on Line Oscillator Radiation.

FEDERAL TECHNICAL ADVISORY COMMITTEE

Peter Gamble reported on discussions with the International Beacon Manager re 21 and 28 MHz Time-Share Beacons.

PRODUCTION OF AMATEUR RADIO

There was a general discussion on the rise in certain costs in the production of the magazine. The best possible magazine must be produced with the money available.

VISITS BY MEMBERS OF EXECUTIVE

David Wardlaw reported on his visit to the Townsville Amateur Radio Club to officially open their biennial Convention held at the James Cook University on September 4, 1987. Over 100 amateurs came from all over northern Queensland to attend the Convention.

The point was made that it was pleasing to have the President of the Institute present to talk to members and answer any questions they may have — naturally many topics were covered.

Ron Henderson forwarded a report of his visit to the Darwin Amateur Radio Club, where he met officials and members and discussed topics of concern with them. Unfortunately, neither David Wardlaw or Ron Henderson will be able to accept an invitation to attend the 21st birthday celebrations of this Club on November 6, 7 and 8, 1987.

A list of correspondence received in the office was presented and details of replies submitted.

CORRESPONDENCE

Every day in the Federal Office, a large and varied amount of mail is received. We can receive up to 100 items per day during the busy times, but it is never less than 20. This involves a considerable amount of time by the Secretary, to open, sort and distribute this quantity of mail each morning. The range of correspondence covers all areas — we have many letters from overseas amateurs who are arranging a visit to Australia requesting information on reciprocal licensing, letters from members commenting on a current popular topic, or an article in *Amateur Radio*, amateurs requesting copies of articles printed in magazines eight or 10 years ago (not *Amateur Radio*), as well as regular mail from Divisions, Federal Co-ordinators, members of Executive, etc, not to mention the usual flow of subscriptions, and notification of changes of address and new call signs. Add to this list a copy of our sister Societies magazines from around the world, overseas and local newsletters, and press releases from advertisers. This office makes every effort to answer all mail received, either personally from the Secretary, or by requesting a particular member of Executive or a Federal co-ordinator to answer on behalf of the office. So please bear with us! Don't stop writing — we need to know how you, the member, feels about current topics, but just be a little patient if a reply is not immediately forthcoming!

The 75th Congratulations mentioned in the correspondence above came from one of our sister Societies, who incorrectly had our foundation date as 1912 — we politely thanked them for their congratulations and asked them to amend their records.

NOVICE STUDY GUIDE

During September, we had a visit from the Federal Education Co-ordinator, Brenda Edmunds VK3KT, to discuss the final details and publishing of the *Novice Study Guide*. This important guide fills a gap in our list of publications for the amateur studying for a Novice Licence. Brenda has produced a comprehensive guide, in an easy to read style, which should prove a great help to instructors and students alike.

It will be available this month from your Divisional Bookshops, or the Federal Office. Price is $2.50 plus postage.

REGION III CONFERENCE, SEOUL, OCTOBER 1988

During the Olympic Games in Seoul in 1988, South Korean amateurs will use the special prefix HL88. Visiting athletes who have amateur radio licences will be able to operate the special station 6Y88SOC. This station will also handle third party traffic on behalf of all athletes.

AMATEUR RADIO MAGAZINE LABELS

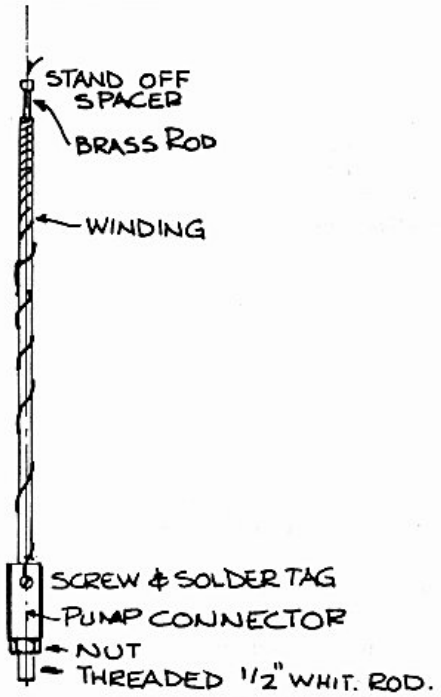
Thank you to all members who contacted this office by phone or letter to advise that there was more than one flysheet and label in their plastic cover of the magazine. This enabled us to ensure another magazine was posted promptly to those members.

FTAC

Do hope you all heard the excellent segment on the Federal Broadcast Tape during September featuring the FTAC Chairman, Peter Gamble VK3YRP. Peter clearly defined the role of FTAC within the Institute, and if you did not hear it, please advise the Federal Office, and arrangements can be made to print it in this section of *Amateur Radio*.

A RECIPE FOR A HELICAL WHIP FOR MOBILE OPERATION

Bob Elms VK6BE
72 Drew Street, Albany, WA. 6330



INGREDIENTS

1 brass spacer 8 mm long and 5 mm in diameter

1 piece 8# brass welding rod 120 mm long
1 electric fence strainer (as sold, 1500 mm length of 10 mm fibreglass rod)

1 reel 16# enamelled copper wire

1 windmill pump coupling (as sold, cylindrical brass 20 mm OD ready drilled and threaded to take ½" Whitworth rod)

1 55 mm length of ½" Whitworth brass or steel rod
1 steel or brass ½" Whitworth nut
1 8# or larger self-tapping screw

1 solder tag to fit screw

1 roll of PVC tape
5 minute Epoxy

METHOD

Drill into end of fibreglass rod 20 mm, dip welding rod tip in Epoxy and tap into end of rod.
Tin tip of welding rod and sweat on brass spacer.

Screw 55 mm length of threaded rod into pump coupling to depth of 30 mm and fit locknut. Tighten locknut.
Epoxy other end of fibreglass rod into pump coupling to a depth of 30 mm. Set aside till set.

Drill into brass coupling at right angles to fibreglass rod 20 mm from fibreglass. Screw in self-tapping screw with washer and solder tag. Tighten.
This completes the whip, which now has to be wound and tuned.

WINDING

Tin end of enamelled copper wire and solder to brass welding rod close to fibreglass section of whip.
Close-wind to length required, then space- wind increasing spacing to bottom of rod.
Bare end of copper wire and solder to solder- tag.
Check for frequency, and adjust by adding or subtracting turns if there is a large discrepancy, or by heating and sliding the brass spacer on the end of the rod up or down to make adjustments of 20 kHz or so. Allow for lowering of frequency of about 20 kHz when the whip is taped.
Tape the rod from the top of the winding down over the brass base so that the solder tag and screw are covered.
Recheck and readjust by moving the brass spacer if necessary.

NOTES

1. Rough checking for frequency can be done by mounting on car and coupling to a general coverage receiver, tuning across the range required. The whip is fairly sharp and an increase in noise can be heard as the receiver is tuned across the resonant frequency of the whip. If it appears that frequency is within the amateur band, use an SWR bridge to fine tune.

2. If difficulty is encountered in finding the resonant frequency of the whip, make up a loop on a PL259 plug and use this to couple a GDO into the base of the antenna when mounted in position on car.

3. The winding lengths given were for a standard base 70 mm high with mounting spring 120 mm high. If no spring is used the ½" Whitworth rod and nut should be omitted and the length of winding increased to make up the inductance of the spring. The windmill coupling will screw straight down onto the standard heavy duty base.

4. The brass spacer on the end of the whip is an important item. Do not leave it off. It not only allows for easy fine-tuning of the frequency of the whip, but it also prevents corona effects and arcing at the end of the whip. These can not only burn up the tip of the whip, but will cause TVI and BCI.

LENGTH OF WINDING

20 metres: Close wind for 290 mm, then space wind starting at about 20 mm, increasing to 100 mm at base of whip.

80 metres: (use 15 mm fibreglass rod glued into a hexagonal windmill pump coupling — these are reducing 5/16" to ½"). Close wind for 1035 mm, and then space wind as before. If 10 mm fibreglass rod is used as for the other bands, more turns will be required. Try an extra 250 mm for a start.

40 metres: Close wind for 750 mm, and them space wind as for 20 metres.

The whips were made in a very short time, and cost less than $10 to make. The fencing strainers and windmill couplings were purchased for about $3 each from a farm hardware store.

ar

TOPICAL TECHNICALITIES — 1

(Apologies to G3VA)

Lindsay Lawless VK3ANJ
Box 112, Lakes Entrance, Vic. 3909

Are you confused about the theory practice and purpose of "Impedance Matching"?

If so, read on, the following might be useful. Match it with the 'conventional wisdom; of some amateur texts and technical articles about the topic.

Maximum energy transfer from a source to a load occurs only when the load impedance is the conjugate of the source impedance.

ie, Source and load resistances are equal and source and load reactances are equal but opposite kinds.

$$R_s \pm jX_s = R_1 \pm X_1$$

For that matched condition efficiency is 50 percent.

The most common practical reason for 'matching' is to obtain maximum 'Conversion Efficiency' and not maximum energy transfer.

An idealised design of a linear amplifier using solid state devices in Class B push-pull illustrates the conversion efficiency idea. The task is to convert DC energy to RF and couple that to an aerial. The chosen devices and the associated heat sinking are capable of dissipating 25 watts and will be used to that limit. The supply is 12 volts.

Assume sine wave drive and that the peak RF volts can equal the supply volts (E_b = 12 V) then

$$\text{RF power out} = P_o = 12\, I_p/2 \text{ watts} \quad \ldots(1)$$

I_p = peak RF current.

In Class B RF amplifier with sine wave drive:

$$I_p = (\P/2)I_b \text{ therefore,}$$

$$P_o = 3\P I_b = 12I_b - 25 \quad \ldots(2)$$

Solving (2) for I_b,

$$I_b = 25/(12\text{-}3\P) = 9.7 \text{ amps.}$$

The conversion efficiency = RF power ÷ DC power

$$= (12x9.7\text{-}25)/(12x9.7) = 0.78 = 78\%$$

The peak envelope power (PEP) is 182.8 watts and the average power 91.4 watts.

The next task (the so-called matching problem) is to transfer 182.8 watts PEP to the aerial preferably without further loss (we are already losing 25 watts). Look at the resistances involved so far:

$$\text{DC Resistance} = 12/9.7 = 1.57 \text{ ohms.}$$

$$\text{RF Resistance} = E_b^2/P_o = 144/91.4 = 1.57 \text{ ohms.}$$

1.57 ohms is not a good choice for aerial system resistance and we prefer to transform this to the popular choice, 50 ohms, therefore a step up transformation of $(50/1.57)^{1/2}$ is necessary; a broadband ferrite core RF transformer will do the job.

Solid state RF linears with transformer coupling to the aerial system differ from the valve types which could absorb reflected reactance in the tuned circuit anode loads. The aerial system for this example must present a resistive load otherwise the predicted efficiency will not be realised and there is the possibility that high reactive current components will destroy the solid state devices.

Standing waves on RF transmission lines have the effect of presenting complex impedances at the line input, therefore if standing waves cannot be avoided it will be necessary to use a coupler between linear output and line input to tranform the resistive component to 50 ohms and/or cancel the reactive component. Best, but not often the practical solution, is to adjust the aerial impedance to 50 ohms resistive and use a 50 ohm line direct to the linear.

Because of the absence of selective circuits in the linear output, it will be necessary to include a low pass filter in the aerial system to provide attenuation of out of band emissions.

None of the above mentions matching load impedance to source impedance. Where is the source impedance?

Contrary opinions welcome, addressed to QTHR.

ar

BUILDING BLOCKS REVISITED — Part 6

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The modules so far described produce a transmit signal at a level of around one to two milliwatts into 50 ohms.

IT REMAINS TO boost this signal to somewhere around 30 watts in order to have a usable on-air signal or one large enough to drive a higher power linear.

At least three stages are needed to get to the 30 watt level and this article describes a two-stage "pre-driver" that delivers around two watts of continuous power (four watts PEP).

The "pre-driver" adheres to the overall philosophy of a broadband device whose output is constrained to the required operating segment by means of separate filters. It must be emphasised that the unit must **never** be put on-air without a filter installed.

The literature on medium to low level drivers is a little scant and some difficulty was experienced in choosing transistors that would do the work required of them and which were consistently available in Australia.

Table 1 — Test Results (without filters).

Supply volts	12.00
Collector volts — 2N5590	11.95
Base volts — 2N5590	2.24
Emitter volts — 2N5590	1.46
Collector current — MRF 517 — mA	60.50
Collector current — 2N5590 — mA	840.00
Total unit current — mA	940.00
Input — all frequencies	+1.5 dBm
Output — at 10 MHz	2.00 watts
Mid-band gain	≈ 31.5 dB

FREQUENCY — MHz	OUTPUT dB RELATIVE to 2 Watts
0.34	-10.00
0.72	-7.00
0.79	-5.30
0.95	-3.00
1.00	-1.55
2.00	-0.20
3.00	+0.10
4.00	+0.20
10.00	0.00
20.00	-0.70
30.00	-0.83
40.00	-0.97
50.00	-1.40
60.00	-2.60
62.10	-3.00
70.00	-5.20
73.00	-6.00
76.00	-7.00
84.00	-10.00

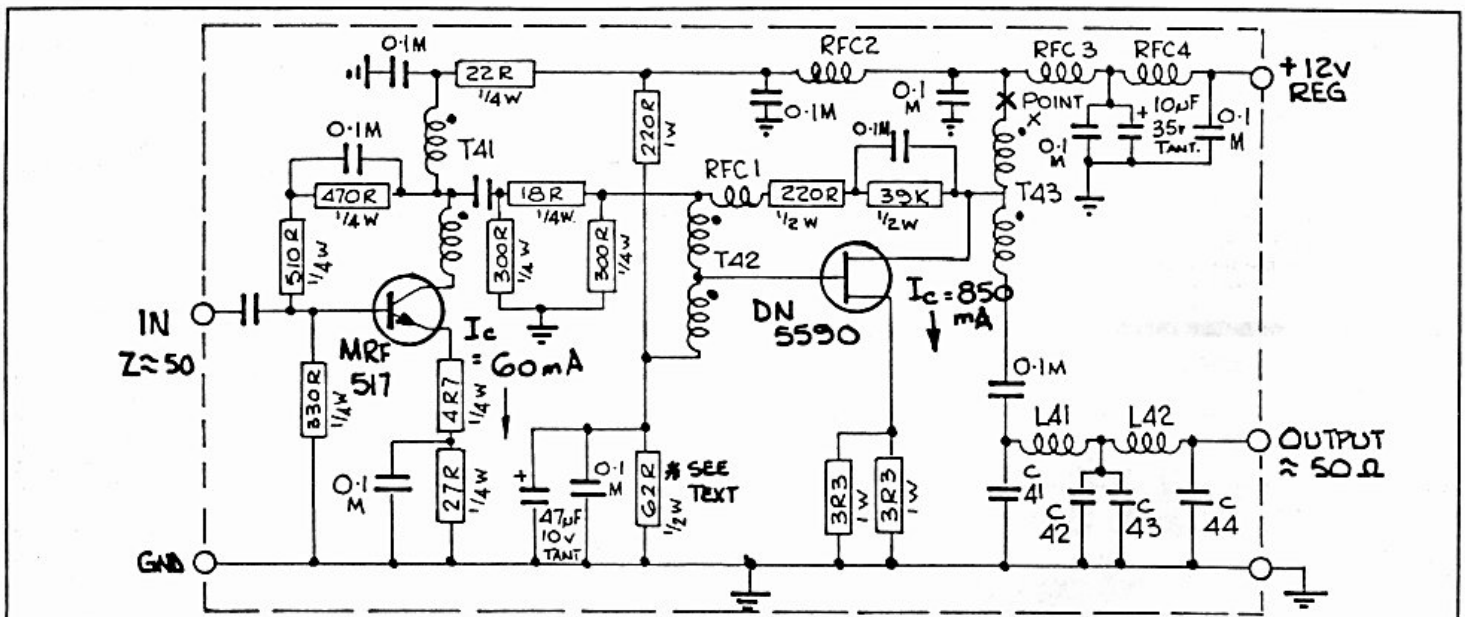

Figure 26:
Two-Watt Broadband Amplifier and Filters.

NOTES:
T41, T42 — Six Bifilar Turns No 26 AWG (0.40 mm) Enamel on Amidon T37/77 Ferrite Toroid.
T43 — Seven Bifiliar Turns No 26 AWG (0,40 mm) Enamel on Amidon BN 73-202 Ferrite Balun Core.
RFC1 — 20 Turns No 30 AWG Enamel Close-wound on Body of 100k half-watt resistor.
RFC2, 3, 4 — 2.5 Turns on six-hole Ferrite Bead — Philips No 4312-020-36700 or Amidon FB-43-5111.
C41-44. L41, 42 — See Table for various Amateur Bands.

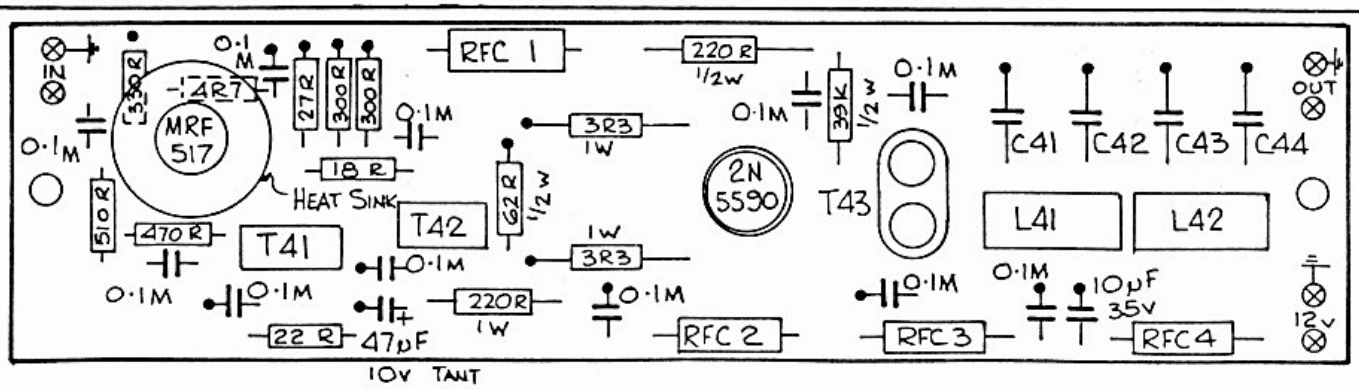

Figure 27: Layout of Components.

NOTE: ● designates soldering to top of board only.

Table 1 gives the performance of the unit before installing any filters. The Table shows it has a 3 dB (half power) bandwidth of over 60 MHz with less that 1 dB variation over the 2-30 MHz range of interest to amateurs. Mid-band output is 2.0 watts of CW power.

Figure 26 is the circuit diagram, whilst Figure 27 shows the layout of components on the 150 by 38 millimetres double-sided circuit board used.

Figure 28 shows mounting details of the board to the obligatory heat sink, while Figure 29 shows winding details for the output transformer.

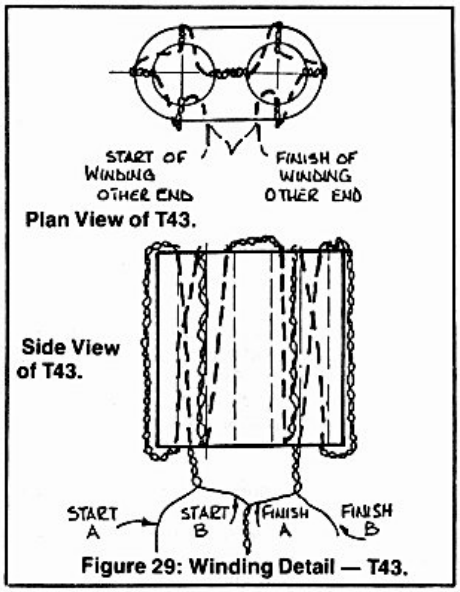

Figure 29: Winding Detail — T43.

The first stage uses a Motorola MRF 517 CATV transistor, while an old favourite, a 2N5590, is used in the second stage. A BFQ43 or 2N5109 could probably be used in place of the MRF517, but this has not been tried.

The MRF517 is biased to draw 60 mA of collector current and a "top hat" type of heat sink is obligatory if device longevity is to be assured. Emitter degeneration and shunt feedback between collector and base are used to achieve a very wide 3 dB bandwidth. The bandwidth of this stage alone is 250 kHz to 82 MHz! Input and output impedances approximate to 50 ohms.

A 3 dB resistive pad is used between the stages to assist the two stages "see" the 50 ohm load and source they seek. The pad does reduce the power available to drive the 2N5590, but this drawback was considered of secondary importance to the need to establish a 50 ohm interface. Its' omission, whilst reducing the drive needed for two watts output, did degrade the "flatness" of the overall response.

The 2N5590 output stage is again operated in Class A with a standing collector current of 850 mA. Again use is made of both emitter degeneration and shunt feedback to achieve wide bandwidth. Simple resistive biasing has been used and its "stiffness" has been assured by pulling some 45 mA through the 220/62 ohm bias network.

The high standing current of the 2N5590 demands very good heatsinking and a 150 millimetres length of "Minifin" is specified. This freely obtainable commercial heatsink has a central "valley" 41 millimetres wide into which the 38 millimetres wide PCB fits nicely.

The type of ferrite toroids and balun cores specified for T41, T42 and T43 are critical. T41/T42 are wound on Amidon 77 mix 9.5 millimetres OD toroids while T43 is wound on an Amidon 73 mix 13 millimetres square balun core. Substitution of other types of core will certainly have a profound effect on the bandwidth of the unit. However, at least three suppliers advertise Amidon products in AR and supply should present no difficulties. For convenience, these suppliers are listed at the end of this article.

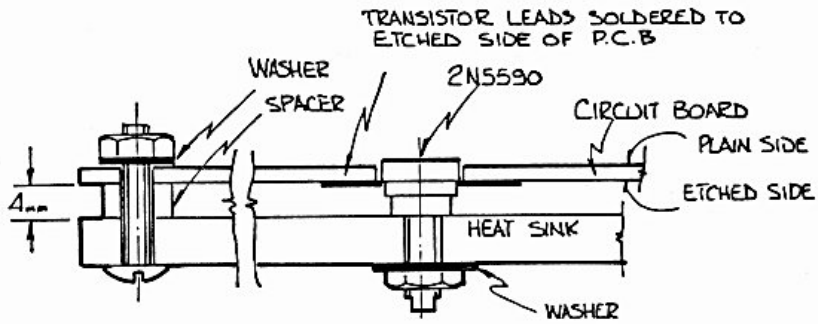

Figure 28: Board and Transistor Mounting Detail.

Output from the 2N5590 is filtered with a two section, 50 ohm, "pi" low pass filter arrangement. The capacitor sizes and coil winding data for each amateur band are detailed in Table 2. These filters use standard value dipped silver mica capacitors and Amidon powdered iron toroidal coil formers. Use of ceramic capacitors in place of silver micas is not recommended although 100 volts or 630 volt polystyrene capacitors are an acceptable substitute.

Table 2 — Filter Data.

BAND	L41/42 µH	No TURNS	AWG WIRE GAUGE	TORO FORMER	C41-44 pF
160	3.76	27	26	T50/2	1500
80	2.05	20	26	T50/2	820
40	1.08	15	24	T50/2	430
30	0.75	13	24	T50/6	300
20	0.55	12	24	T50/6	220
17	0.40	10	22	T50/6	160
15	0.37	10	22	T50/6	150
12	0.30	9	22	T50/6	120
10	0.25	8	22	T50/6	100

Footnote to Table 2:
0.40 millimetres can be used in place of 26 AWG
0.50 millimetres can be used in place of 24 AWG
0.80 millimetres can be used in place of 22 AWG
All wires are enamelled.

CONSTRUCTION

The unit is built on a 150 by 38 millimetre double-sided circuit board and the parts placement in given in Figure 27. It should be noted that *all* ground returns are made to the top or ground plane side of the board. These grounds are identified on Figure 27 by a solid black dot.

The method of winding the toroidal transformers T41/T42 was detailed in Figure 25 of Part 5 of this series (AR September 1987).

T43 is also bifilar wound, but on a two-hole balun core. Figure 29 shows how to do this. There are three turns through one hole, one turn between the holes and three turns through the other hole. The start and finish of the winding come out at the same end of the former — one out of one hole, one out of the other. Trial winding with a piece of string will be of great assistance in becoming familiar with what is required.

The method of soldering the 2N5590 to the underside of the board, and the method of mounting the board onto the heatsink is detailed in Figure 28. It will be found of great assistance to transfer the centres of the two 3 millimetre bolt positions and the 4.5 millimetre stud hole for the 2N5590 from the PCB to the heatsink *before* putting any components on the board.

COMMISSIONING

A temporary short is placed across the input pins and the output connected to a 50 ohm, 2-5 watt power meter. 12 volts are applied through a ammeter capable of indicating at least two amps.

Power is applied and the ammeter reading noted. If the total current drawn is between 0.9 and 1.0 amps then all is well!

If the total current is over 1.0 amps then the 62 ohm bottom bias resistor needs reducing in value. This is best done by paralleling it with, say, a 330 ohm or thereabouts until the total current drawn is within range. The composite resistor can then be measured and replaced with one having the next lowest standard value.

If the total current is too low then the 62 ohms specified must be increased in value. Do this by adding, say, 2.2 or 4.7 ohm resistors in series until the requisite total current is drawn. Measure the value of the composite resistor and replace it with one having the next highest standard value.

It is not anticipated that this rather annoying procedure will be necessary in most cases. However, some 2N5590s might fall far enough outside the average to need some bias adjustment.

Assuming that an operating frequency has been chosen, and that the appropriate filters have been installed, a signal may then be injected into the input and the output measured. This input signal will not need to exceed 2 mW to obtain two watts of CW output.

The next part of this series will describe a 30/40 watt PEP final.

FOOTNOTE:
Amidon product suppliers:
Stewart Electronic Components, PO Box 281, Oakleigh, Vic. 3166. Telephone: (03) 543 3733.
Ian J Truscotts Electronic World, 30 Lacey Street, Croydon, Vic. 3136. Telephone: (03) 723 3860/723 3094.
R J and U S Imports, Box 157, Mortdale, NSW. 2223. No telephone.

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VHF/UHF BUILDING BLOCKS — Part 4

MODULE B — Building Block Six Metre Transverter

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In this fourth installment we will consider the design of a six metre transverter. Originally proposed as a 100 mW unit the final design is, in fact, a 500 mW unit.

As with all the proposed units in this series, a thorough search of the existing literature was undertaken. Until about 12 months ago, the only example of a solid state six metre transverter found was the W7ZOI design in the *ARRL Handbook*. Recently, however, a number of new designs have appeared in the British magazines with the release of six metres for use there. None of the designs seen were considered easy to construct due to availability of parts. The design presented here is simple conservative and, most importantly, the parts are easily obtained.

RECEIVE CONVERTER

The six metre receive converter was probably the easiest part of this whole series to design. At this sort of frequency many things become much less of a problem than at either lower or higher frequencies. Common dual gate MOSFET transistors, such as the BF981 and MFE131, exhibit excellent gain and good noise performance at these frequencies.

Purely for ease of supply, the preamplifier uses the BF981 as found in several other modules of this series. There is no need for a new PCB for the six metre receive converter. The converter is constructed on the same board as the two metre converter. A careful examination of the layout drawing will reveal that a 100 ohm resistor (B1R15) is used in place of the resonant circuit in the drain. Due to the gain of the BF981 at six metres, the use of a tuned input, a tuned output stage would require neutralisation, something the author always avoids. Thus the 100 ohm resistor limits the gain and provides a purposely mismatched load to help keep things "tame".

A small coupling capacitor is used to couple the output of the preamplifier stage into the second tuned circuit, at the input to the mixer. As readers may recall, this tuned circuit in the two metre converter is matched with tapped capacitors rather than the tapped inductors used elsewhere. This was done so the same PCB could be used here. This tuned circuit provides most of the selectivity for the converter.

The mixer, diplexer and post mixer amplifier are all identical to the same sections used in the two metre converter. For convenience and uniformity, the complete schematics and parts list are also shown in this article. Diplexer details are given in part 2 of this series.

LOCAL OSCILLATOR

No separate board has been produced for the local oscillator injection in this transverter. Module 7 of the VK3AFQ *Building Blocks Revisited* series is used instead. This module consists of a fundamental mode crystal oscillator, an MC1496 mixer stage and a Class A amplifier. In this application, the oscillator is operated with a fundamental mode crystal of the appropriate frequency (24 MHz for 52 MHz input with 28 MHz IF). The mixer is not used here but the amplifier is used to boost the output from the oscillator to a sufficient level to drive the two double balanced mixers.

If it is desired to use the six metre transverter with a two metre IF then a 94 MHz injection oscillator is needed, in fact the board from the two metre (six metre IF) transverter can be used here. Amended arrangements for mixer termination and IF amplifier will be discussed in a later installment.

TRANSMIT CONVERTER

Again the transmit converter is similar to the two metre transverters. Provision is made for an input attenuator to allow use of up to five watt exciters. For design details of this attenuator refer to part 3 (October 1987 AR), of this series.

The double balanced mixer is used in the same way and is followed by a pair of tuned circuits as before. There the similarity ends. At these lower frequencies it is possible to use somewhat simpler amplifier arrangements, including Class A feedback amplifiers.

However, simplicity of amplifier arrangements does not mean they are any less critical in design. As frequency decreases, the gain of the transistors increases, thus the lower the frequency the more chance of having unexpected instability and oscillation. If transistors are operated at 50 MHz or below, then significant measures usually need to be taken to prevent instability.

This six metre low power amplifier is a three-stage design with all stages operating in Class A. Using this technique with shunt and series feedback in all three stages, the gain of each is well defined and the chances of instability are dramatically reduced. Although expensive on supply power, this technique gives excellent performance, total power consumption for the three stages is in the order of 220 mA at 12 volts.

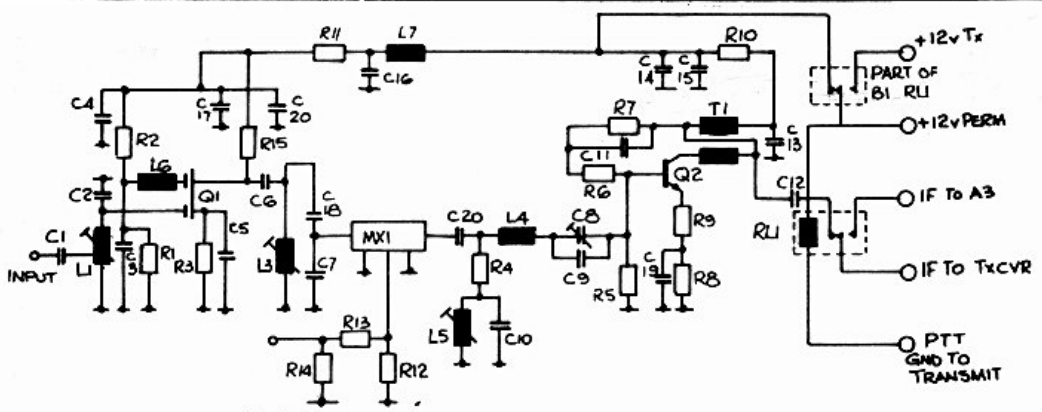
Located at the module input is the now familiar critically coupled pair of tuned circuits. With this arrangement the prototypes gave a frequency response at the 3 dB points of 51.590 MHz to 54.020 MHz, at the 10 dB points the response was from 50.950 to 54.800 MHz. As can be seen, it is only possible to cover one 2 MHz segment of the band, but it could be aligned for response from 50-52 MHz if desired. If the transverter is followed with a power amplifier having an ALC facility, this will flatten out and extend the power bandwidth slightly.

The first two stages are classic Class A amplifiers with shunt and series feedback, each stage having a gain of some 15 dB. Stage 1 uses a BFR96S, X packaged transistor and small commercial broadband transformer or a homemade bifilar toroidal transformer in the collector. Stage 2 uses an NTE77, TO5 transistor fitted with a small heatsink due to the high standing dissipation, both these stages have excellent performance in all respects. The output stage uses a Philips BFQ43 four watt TO39 RF power transistor. This device was chosen because of its ability to perform well in a Class A stage with approximately 160 mA of quiescent collector current. At the output of the module is a fairly conventional pi-section low pass filter.

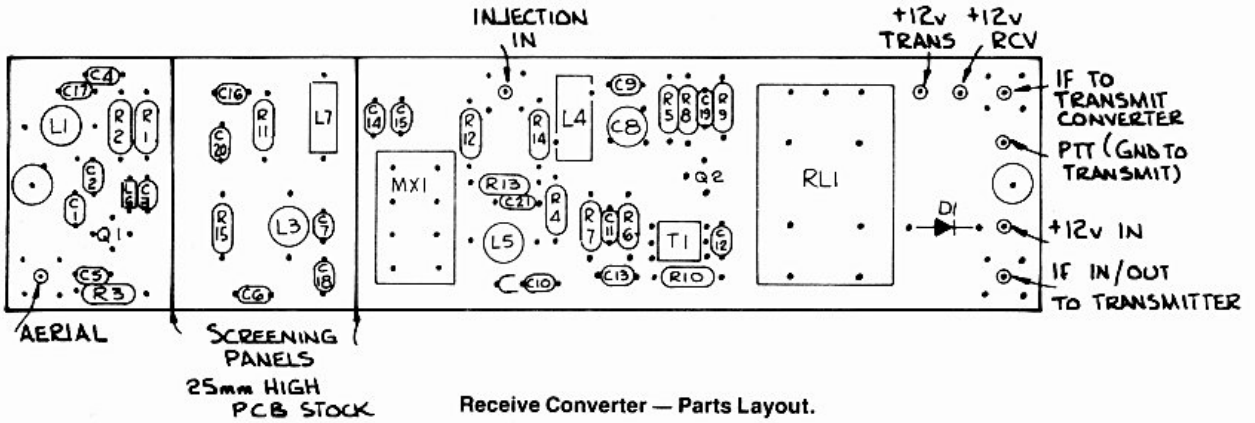
Given that the amplifier chain is functioning well below the 1 dB gain compression point and with the good inter-modulation performance of the mixer, it was found that the second harmonic was approximately -60 dBc and third order inter-modulation products were at a level of approximately -48 dBc.

ALIGNMENT

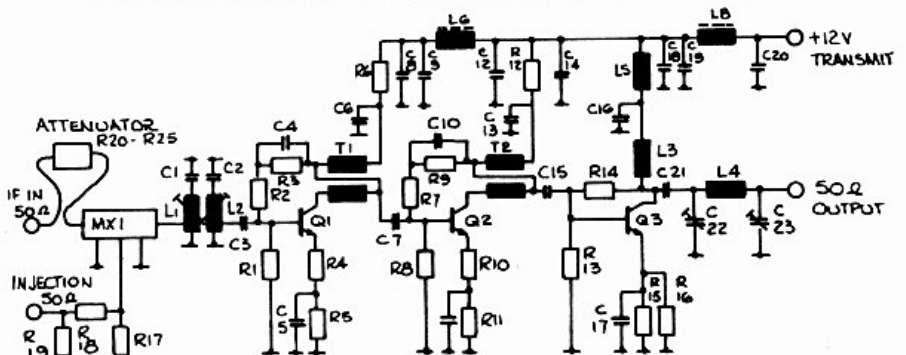
In general, the alignment of this module is similar to all of the others. All cores should be set at the top of their formers and the trimmers at approximately half-range. The crystal oscillator trimmer should be adjusted to 22 or 24 MHz as is appropriate if a frequency counter is available. If a counter is not available, leave it is the centre.



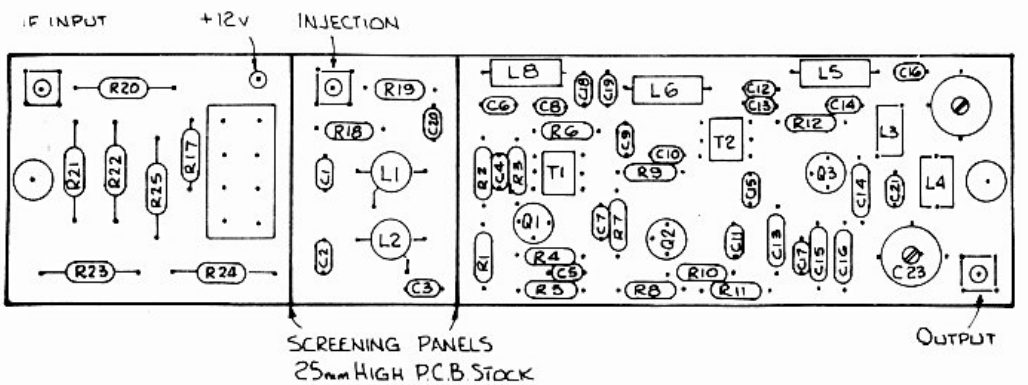
Module B, Sub-Assembly 1. Six metre Receive Converter.



Receive Converter — Parts Layout.



Module B, Sub-Assembly 2. Six metre Transmit Converter.
Prefix all component designations with B2.



Six Metre Transmit Converter. Module B, Sub-Assembly 2.

The transmit converter has only a minimum of adjustments, the filter following the mixer and the output harmonic rejection low pass filter. Set the cores in B2L1 and B2L2 level with the top of their formers and the two trimmer capacitors B2C22 and B2C23 to centre position. With drive applied and the output feeding a 50 ohm load, adjust the filter cores for maximum output and then the trimmers likewise for maximum output.

ADDITIONAL NOTES

Several local amateurs have requested a two metre to six metre transverter to allow them to utilise their two metre multi-mode transceivers on the lower band. This is possible by using the transmit converter as it is but with 92 or 94 MHz injection. This can be done with the local oscillator section of the two metre transverter previously described. The receive converter module requires modification for the much higher IF frequency, a modification should be available soon and will be published as soon as practical, but in the meantime it is possible to run the converter with just a 6 dB 50 ohm pad for termination in place of the diplexer, followed by a low gain (6-10 dB) amplifier if necessary.

Many two metre receivers have significantly better sensitivity than their HF counterparts so the additional gain may not be needed. If it is, then the following changes are suggested to allow the IF amplifier to work at 144 MHz. Remove B1T1 from the PCB and connect a 4.7 uH RF choke from the collector of B1Q2 to the top of B1C13. Now place a small bridge of wire between the collector of B1Q2 and B1C12 to couple the IF output and to reconnect the feedback network B1R7, B1C11 and B1R6.

ADDENDA

Some of you may have noticed some slight discrepancies between the photographs in parts 2 and 3 of this series when compared with the layout drawings presented. This is due in large measure to delays in the availability of final printed circuit boards. Copies of the correct layout drawings will be sent with all boards and kits.

AVAILABILITY

Due to the reasonably complex nature of this series of projects and the necessity of using double-sided printed circuit boards on all modules, with some of the later ones having plated through holes, I have decided not to release the artwork for the printed circuit boards. This is not an attempt to promulgate a commercial project series, but to protect myself and many others from the efforts of some over enthusiastic amateurs.

For your convenience, printed circuit boards and kits of components are available from the Frankston and Mornington Peninsula Amateur Radio Club (see Hamad under *Building Block Modules* this month). Assembled and tested boards, individually or in combination will be available from Kamtron Industries of Rowville, Vic. (See advertisement, page 7 October AR).

AUTHOR'S NOTE

The author will gladly answer technical queries on receipt of your written inquiry accompanied by a SASE. Due to other commitments and limited time, it is impossible to answer telephone inquiries.

PARTS LIST — Module B Sub-Assembly 1, Receive Converter

B1C1	1nF	Ceramic Plate
B1C2	10 pF	NPO Ceramic Plate
B1C3	1 nF	Ceramic Plate
B1C4	1 nF	Ceramic Plate
B1C5	1 nF	Ceramic Plate
B1C6	4.7 pF	NPO Ceramic Plate
B1C7	100 pF	NPO Ceramic Plate
B1C8		See option table (previous article)
B1C9		See option table
B1C10		See option table
B1C11	10 nF	Ceramic
B1C12	10 nF	Ceramic
B1C13	10 nF	Ceramic
B1C14	100 nF	Monolithic Ceramic
B1C15	10 uF	16V Tantalum
B1C16	100 nF	Monolithic Ceramic
B1C17	10 nF	Ceramic
B1C18	22 pF	NPO Ceramic Plate
B1C19	10 nF	Ceramic
B1C20	1 uF	TAG Tantalum
B1C21	10 nF	Ceramic
B1D	1N4002	or similar Silicon 1A Diode
B1L1	CG108	270-310 nH Adjustable Coil
B1L2		Not used
B1L3	CG108	270-310 nH Adjustable Coil
B1L4		See Option Table
B1L5		See Option Table
B1L6	FC540	Amidon choke bead on lead of B1R2
B1L7	10 uH	Moulded RFC
B1MX1	SBL-1	Mini Circuits Labs Mixer Doubler
B1Q1	BF981	Dual Gate MOSFET
B1Q2	2N3866	TO-39 Transistor
B1R1	10 k	Five percent 0.125 watt Carbon Resistor
B1R2	22 k	Five percent 0.125 watt Carbon Resistor
B1R3	33 R	Five percent 0.125 watt Carbon Resistor
B1R4	51 R	Five percent 0.125 watt Carbon Resistor
B1R5	1 k	Five percent 0.125 watt Carbon Resistor
B1R6	560 R	Five percent 0.125 watt Carbon Resistor
B1R7	3k3	Five percent 0.125 watt Carbon Resistor
B1R8	100 R	Five percent 0.125 watt Carbon Resistor
B1R9	4R7	Five percent 0.125 watt Carbon Resistor
B1R10	100 R	Five percent 0.125 watt Carbon Resistor
B1R11	100 R	Five percent 0.125 watt Carbon Resistor
B1R12	150 R	Five percent 0.125 watt Carbon Resistor
B1R13	39 R	Five percent 0.125 watt Carbon Resistor
B1R14	150 R	Five percent 0.125 watt Carbon Resistor
B1R15	100 R	Five percent 0.125 watt Carbon Resistor
B1RL1	NF2-12V	National two-pole 12 volt relay

PARTS LIST — Module B Sub-Assembly 2, Transmit Converter

B2C1	22 pF	NPO Ceramic Plate
B2C2	22 pF	NPO Ceramic Plate
B2C3	10 nF	Ceramic Plate
B2C4	10 nF	Ceramic Plate
B2C5	10 nF	Ceramic Plate
B2C6	10 nF	Ceramic Plate
B2C7	10 nF	Ceramic Plate
B2C8	10 nF	Ceramic Plate
B2C9	4.7 uF	Tantalum
B2C10	10 nF	Ceramic Plate
B2C11	10 nF	Ceramic Plate
B2C12		Not used
B2C13		Not used
B2C14	100 nF	Monolithic Ceramic
B2C15	10 nF	Ceramic Plate
B2C16	10 nF	Ceramic Plate
B2C17	10 nF	Ceramic Plate
B2C18	10 nF	Ceramic Plate
B2C19	4.7 uF	Tantalum
B2C20	100 nF	Monolithic Ceramic
B2C21	10 nF	Ceramic Plate
B2C22	130 pF	Film Trimmer
B2C23	130 pF	Film Trimmer
B2L1	CG108	270-310 nH Adjustable Coil
B2L2	CG108	270-310 nH Adjustable Coil
B2L3	10 uH	Miniature Moulded RFC
B2L4	6T # 22	T50-6 Core
B2L5	1 mH	Miniature Moulded RFC
B2L6	10 uH	Miniature Moulded RFC
B2L7		Not used
B2L8	100 uH	Miniature Moulded RFC
B2MX1	MCL SBL-1	Mixer
B2Q1	BF96	
B2Q2	NTE77	with small Heat Sink
B2Q3	BFQ43	with small Heat Sink
B2R1	1 k	Five percent 0.25 watt Carbon Resistor
B2R2	560 R	Five percent 0.25 watt Carbon Resistor
B2R3	3k3	Five percent 0.25 watt Carbon Resistor
B2R4	4R7	Five percent 0.25 watt Carbon Resistor
B2R5	82 R	Five percent 0.25 watt Carbon Resistor
B2R6	33 R	Five percent 0.25 watt Carbon Resistor
B2R7	560 R	Five percent 0.25 watt Carbon Resistor
B2R8	1 k	Five percent 0.25 watt Carbon Resistor
B2R9	3k3	Five percent 0.25 watt Carbon Resistor
B2R10	4R7	Five percent 0.25 watt Carbon Resistor
B2R11	18 R	Five percent 0.25 watt Carbon Resistor
B2R12		Not used
B2R13	240 R	Five percent 0.25 watt Carbon Resistor
B2R14	1k2	Five percent 0.25 watt Carbon Resistor
B2R15	10 R	Five percent 0.25 watt Carbon Resistor
B2R16	18 R	Five percent 0.25 watt Carbon Resistor
B2R17	150 R	Five percent 0.25 watt Carbon Resistor
B2R18	36 R	Five percent 0.25 watt Carbon Resistor
B2R19	150 R	Five percent 0.25 watt Carbon Resistor
B2R20		See Text — Attenuator Design Detail
B2R21		See Text — Attenuator Design Detail
B2R22		See Text — Attenuator Design Detail
B2R23		See Text — Attenuator Design Detail
B2R24		See Text — Attenuator Design Detail
B2R25		See Text — Attenuator Design Detail
B2T1	T101	MCL Transformer or 5T # FT37-61 core Bifilar
B2T2	T101	MCL Transformer or 5T # FT37-61 core Bifilar

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Frequency Bands and Emissions

by the Future of Amateur Radio Working Party

The Working Party membership includes:
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INTRODUCTION

The Future of Amateur Radio Working Party (FARWP) is preparing a series of Working Papers addressing future issues facing the Amateur Radio Service in Australia over the near and more distant future.

An earlier paper identified a number of factors which become limitations or constraints on the Working Party's deliberations. Frequency bands and emissions did not feature strongly in those factors, apart from acknowledging the need to conform to national frequency allocation plans, the national observance of ITU Radio Regulations and the assertion that occupied bandwidth was a more important characteristic of an emission mode than the precise details of how the intelligence was generated and then modulated onto the carrier.

AIM

The aim of this second FARWP paper is to clarify the available frequency bands and emission modes and to examine effects of possible changes in the future.

FREQUENCY BANDS

CURRENT SITUATION

Australian amateur radio frequency bands were examined in considerable detail by the Federal Council of the Institute in the "Band Plans for the Amateur Radio Service" paper adopted at the 1986 Federal Convention. That paper reviewed the status, (ie Exclusive or shared, gentlemen's agreements on modulation modes and IARU Region 3 considerations), however little detail was provided for bands above 1.3GHz. A brief synopsis of the current situation is given in Table 1.

SHORT TERM WIA POLICY GUIDANCE

The Federal Council has, over the years, developed policies related to a number of the current amateur bands displayed in Table 1 in addition to some other desired amateur allocations. These are considered in ascending frequency order in the following paragraphs.

VLF AND MF BANDS

There are two current policies; to seek a narrow band or spot frequency at VLF at about 190 kHz '(84.09.11) and to extend the 1.8 MHz band to 1.800 - 2.000 MHz '(75.110/1).This latter was a WARC79 planning motion and consequently is now in need of review.

HF BANDS

3.5 MHz

An early request for a *DX window* at 3.79 - 3.8 MHz '(71.15.01) was updated to seek 3.5 - 4.0 MHz and eliminate sharing '(75.110/1). This was revised in 1981 to seek 3.7 to 3.9 MHz '(81.127). Expansion of the novice segment was subsequently tied to any increase in this band '(86.09.01/1).

7 MHz

The pre-WARC79 proposal was for 7 - 7.5 MHz and eliminate sharing '(75.110/1). This was revised to seek 7.15 - 7.3 MHz in 1982 '(82.1203).

10 MHz

There are no requests outstanding with regard to the 10 MHz band.

14 MHz

The pre-WARC79 request for 14 MHz was to extend the upper limit to 14.5 MHz '(75.110/1).

18 MHz

There are no requests outstanding for the 18 MHz band, presuming exclusive amateur usage will be achieved in 1989.

21 MHz

The pre-WARC79 request for 21 MHz was to extend the upper end to 21.5 MHz '(75.110/1).

24 MHz

There are no requests outstanding for the 24 MHz band, presuming exclusive amateur usage will be achieved in 1989.

VHF, UHF AND SHF BANDS

50 MHz

A request for return of the 50 - 52 MHz band segment has been in existence since 1977 '(77.125) with a conditional use response. The easing of these conditions remains an active objective of the WIA.

420 MHz

No policies are active on the extent of the 420 MHz band, however opinions have been expressed on the balance between a broad shared band and a smaller exclusive allocation. ATV repeater considerations dominate bandwidth requirements.

576 MHz

The 576 MHz band has been subject to considerable pressure with the WIA policy indicating the need for an ATV repeater frequency allocation which need not be the same nationwide. Many overlapping policies exist with the most recent seeking a permanent ATV allocation '(84.09.07).

1296 MHz No policies are active to seek changes to the 1296 MHz band, amateur usage of which is secondary and dominated by Department of Transport and Communications ATC radar allocations. Once again the shared band versus small exclusive allocation issue arises.

It is timely that the pre-WARC79 request for an amateur band at 220 MHz be reviewed '(75.110/2).

MICROWAVE BANDS

Recent DOTC initiatives to establish a Multi-point Distribution Service (MDS) in the shared 2.3 GHz band appear to make that band virtually unusable by amateurs, particularly in major cities and for weak signal (EME) working.

There are no policies existing for the remaining microwave bands, all of which are shared bands. Their use by Australian amateurs is restricted to dedicated experimenters whose aims are principally equipment design and development and establishing DX records.

WIA GUIDANCE FOR WARC92 (WORLD ADMINISTRATIVE RADIO CONFERENCE 1992

The WIA has no specific guidelines for WARC92, the topic not having been addressed as yet by the Federal Council. Indeed this paper provides a resume of past actions and current policies and becomes essential reading prior to WIA preparations for WARC92.

It is pleasing to observe that many of the 1975 motions for WARC79 have been achieved. A very few are outdated and clearly unlikely to be achieved.

Other considerations such as exclusive UHF, SHF and microwave bands , whilst having a WARC connection, are more for national administration negotiations, unless the IARU sees a need to take a world wide position on exclusive bands. The Institute can be relied upon to actually represent the interests of amateurs in such negotiations.

IARU GUIDANCE FOR WARC92

At the last IARU Region 3 conference in Auckland in 1985, preliminary overtures were made in a paper submitted by the Chairman of Directors to initiate thought as to amateur band implications for the next WARC.

No doubt the Region 2 conference in 1986 and the Region 1 conference this year also considered the matter and a resume of their actions will be made for Federal Councillors prior to the 1988 WIA Convention. Note that with the IARU Region 3 meeting due in Seoul in late 1988, a clear initial WIA position must be presented in that forum.

Points arising from the Region 3 Auckland 85 papers are presented below in ascending frequency band order.

The need for a VLF assignment was raised and it was proposed to raise the MF segment 1.850 - 2.000 MHz to primary equally shared status.

The HF segment 3.750 - 4.000 MHz was proposed to be raised to primarily equally shared status. It was proposed 7.000 - 7.150 MHz becomes amateur exclusive and 7.150 - 7.300 MHz amateur primary equally shared status.

Proposed 10 MHz band be extended to 10.300 MHz and be on an equally shared status.

Proposed 14 MHz band be extended to 14.400 MHz amateur exclusive.

Proposed 18 MHz band be extended to 18.300 MHz amateur exclusive.

Proposed 21 MHz band be extended to 21.500 MHz amateur exclusive.

Proposed 28 MHz band be extended to 30.000 MHz amateur exclusive.

Proposed the 50 MHz band be extended to 50 - 54 MHz amateur exclusive.

Proposed the 144 MHz band becomes 144 - 148 MHz amateur exclusive worldwide.

In the 420 MHz band seek amateur equally shared status except the satellite band 435 - 440 MHz amateur exclusive.

Seek an exclusive amateur segment about 902 - 928 MHz.

Seek amateur primary status for 2400 - 2450 and 3400 - 3420 MHz.

Seek primary equally shared status for 3420 - 3475 MHz.

MF-HF Frequency Allocations — Table 1 — Unrestricted and Novice

	FREQ BANDS IN kHz	STATUS OF ALLOCATION IN AUSTRALIA		OUTPUT POWER PERMITTED		PERMITTED TYPES OF TRANSMISSION *	
		THE AMATEUR SERVICE	THE AMATEUR SAT SERVICE	UNRESTRICTED	NOVICE	UNRESTRICTED	NOVICE
	1800-1825	Primary	No allocation		No allocation		
M F	**1825-1875**	Secondary (non-interference) 1866-1874 to be avoided					None
	3500-3700	Primary 3525-3625 only allocated to novice			Mean Power 10 watts		CW AM
	3794-3800	Secondary (non-interference) 3794-3795 to be avoided		*Mean Power* *120 watts*	Peak Power 30 watts	CW MCW	ISB SSB
	7000-7100	Primary	Primary			AM ISB SSB FAX	
	7100-7300	Secondary (non-interference)	No allocation	*Peak Power*			
	10100-10150	Secondary (non-interference 10137.5-10145.5 to be avoided		*400 watts*		SSTV NBVM-AM NBVM-SSB	None
	14000-14250	Primary	Primary		No allocation	FSK AFSK	
	14250-14350		No allocation				
H F	**18068-18168**	Secondary (non-interference) 18071-18079) 18101-18109) To be 18121-18134) 18141-18151) avoided 18156-18164)	Secondary (non-interference) 18071-18079) 18101-18109) To be 18121-18134) avoided 18141-18151) 18156-18164)			NBFM NBFM-FAX NBFM-SSTV	
	21000-21450	Primary 21125-21200 only allocated to Novice	Primary 21125-21200 only allocated to Novice		Mean Power 10 watts Peak Power 30 watts		CW AM ISB SSB
	24890-24990	Secondary (non-interference) 24896-24904) To be 24910-24918) avoided	Secondary (non-interference) 24896-24904) To be 24910-24918) avoided		No allocation		None
	28000-29700	Primary 28100-28600 only allocated to Novice	Primary 28100-28600 only allocated to Novice		Mean Power *10 watts* Peak Power 30 watts		CW AM ISB SSB * See Table 3

Seek primary status for 5650 - 5670 MHz and primary equalled shared status for 5830 - 5850 MHz.

Seek primary status for 10.45 - 10.5 GHz and primary exclusive status for 24.00 - 24.05 GHz.

Seek primary equally shared status for 76 - 81 GHz and primary exclusive for 119 - 121 GHz.

Seek primary amateur equally shared status for 144 - 149 and 241 - 248 GHz.

GENERAL OBSERVATIONS

With WARC92 looming in five years time, the amateur community must now commence planning both nationally and internationally. Present indications in some countries suggest a hardening of attitudes to further amateur frequency allocations. Furthermore the shared allocations arising from the last WARC in 1979 have not proven completely beneficial to radio amateurs.

EMISSIONS

OCCUPIED BANDWIDTH

The concept of *occupied bandwidth utilised by an emission* was introduced in *Band Plans for the Amateur Radio Service* paper to permit grouping of the various modulation modes. Three bandwidths were identified, namely CW with a maximum bandwidth of 200 Hz, *Narrow Band* with an occupied bandwidth of 1.12 kHz and *Wide Band* for occupied bandwidths greater than 1.12 kHz. (This was further qualified to less than eight kilohertz below 50 MHz, ie AM.) Note also the occupied bandwidth of digital communications is dependent upon the transmission baud rate.

During considerations of band planning, the implied aim was to maximise the number of users (or available channels) whilst minimising mutual interference. The need to allocate spectrum according to user practice and future wishes in a dynamic way, whilst still separating incompatible modes, was acknowledged.

This theme of occupied bandwidth must be continued, for it is considered the characteristics of the modulating signal and not the detail of how it is generated are of greater importance in amateur considerations. This approach acknowledges the *bought out* or *black box* nature of the terminal device and concentrates the amateur expertise in the signal processing stages between terminal and transceiver. In support of this approach, it must be realised that the most complicated digital information stream with in-built error correction appears as a multi-tone modulation at a selected standard baud rate impressed upon the carrier frequency.

MODULATION MODES

Modulation modes may be classified by occupied bandwidth as described above and then further broken down into analogue that is continually variable signals) and digital or discrete state signals. To this end, all commonly encountered and a number of specialist amateur modulation modes are so categorised in Table 2, where each section is that Table progresses from the simply generated modes to the less common modes.

A maximum occupied bandwidth, as authorised by DOTC on amateur licences, is included on the Table for those modes permitted for amateur use. Typical figures are included for the non-authorised modes.

MODULATION CHARACTERISTICS

The two system characteristics influenced most by the modulation characteristics are selectivity and sensitivity. To achieve best selectivity performance sharp bandpass filters should be em-

TABLE 1 — continued

	FREQ BANDS IN MHz	STATUS OF ALLOCATION IN AUSTRALIA		OUTPUT POWER PERMITTED	PERMITTED TYPES OF TRANSMISSION *
		THE AMATEUR SERVICE	THE AMATEUR SAT SERVICE	MAX POWER OUTPUT PERMITTED	PERMITTED TYPE OF TRANSMISSION
V H F	50-52	Secondary (non-interference) Non-interference to any Ch0 50.15-52 WA and Ext Territories Peak power limit 100 watts 50-50.15 NT Peak power limit 25 watts 50.15-52 NT Outside B/C hours of Ch0 stns 50-50.15 SA, Tas. Peak power limit 25 watts 50.15-52 Outside B/C hours of Ch0 Stns	No allocation		
	52-54	Primary			
	144-146		Primary		
	146-148		No allocation	Mean Power 120 watts	
	420-435	Secondary (non-interference)			
	435-438		Secondary (non-interference)		
	438-450		No allocation		
U H F	576-585	Temporary		Peak Power 400 watts	All classes
	1240-1260	Secondary (non-interference)			
	1260-1270		Secondary (non-interference)		
	1270-1300		No allocation		(Subject to comment by WIA)
	2300-2400				
	2400-2450	Secondary (non-interference). Interference may be expected from ISM equipment			
	3300-3500	Secondary (non-interference)			
	5650-5670		Secondary (non-interference)		
	5670-5725		No allocation		
	5725-5850	Secondary (non-interference). Interference may be expected from ISM equipment			
S H F	10000-10450	Secondary (non-interference)			
	10450-10500		Secondary (non-interference)		
	24000-24050	Primary Interference may be expected from ISM equipment	Primary Interference may be expected from ISM equipment		
	24056-24250	Secondary (non-interference) Interference may be expected from ISM equipment	No allocation		
	47000-47200	Primary	Primary		
	75500-76000				
E H F	76000-81000	Secondary (non-interference)	Secondary (non-interference)		
	142000-144000	Primary	Primary		
	144000-149000	Secondary (non-interference)	Secondary (non-interference)		
	241000-248000	Secondary (non-interference) Interference may be expected from ISM equipment	Secondary (non-interference) Interference may be expected from ISM equipment		
	248000-25000	Primary	Primary		

Table 2 — Modulation Modes.

ANALOGUE	Maximum occupied bandwidth
AM	8K00A3E
DSBSC	8K00A3E
SSBSC	4K00J3E
NBVM	2K00J3EKN
ACSSB	2K00J3EKN
NBFM	6K00F3E
FM	36K0F3E
PM	36K0G3E
FAX	3K00J3C
SSTV	3K00J3F
TV	6M25C3FNN — VSB
Pulse	P1A/P1B/ K2A/K2B/ L2A/ L2B/ M2A/M2B/ K3E/ L3E/ M3E
DIGITAL	
CW	NON
ICW	200HA1A
MCW	6K00A2A
RTTY (Baudot)	1K12F1B
AMTOR	1K12F1B
Packet (HF/VHF)	6K00F2D/36K0F2D
Frequency Hopping	50 to 1000 hops/sec across a bandwidth of tens of MHz
Spread Spectrum	USA/FCC authorised full available bandwidth on bands above 420 MHz

ployed, care taken with the selection of local oscillator and intermediate frequencies and wherever possible incompatible modulations widely separated through band planning.

Sensitivity performance is achieved through optimising the signal to signal plus noise ratios at each stage of the process from antenna to detector. Spread spectrum modes may adversely affect performance by raising the prevailing noise floor.

Technology advances include achieving flexibility in signal processing through digitising early after down-conversion, and making all manipulations thereafter in software or firmware. Bandwidth considerations dictate the required processing speeds but much can be achieved with purpose built VLSI chips. That is, purpose built for general receiving applications or specially designed for specialist applications and adapted to amateur situations in inimitable amateur style!

GENERAL OBSERVATIONS

Amateur radio emission modes may be classified by occupied bandwidth. Furthermore future technical interest will lie in signal processing and interfacing terminal devices to transceivers rather than in the generation of the modulation itself. It naturally follows that the complexity of the signal processing achieved is directly proportional to the technical knowledge level of the amateur qualification held. In other words, basic theory levels can permit simple modes and more advanced theoretical levels are supportive of more complex modes.

CONCLUSIONS

It is predicted by the FARWP that amateur frequency allocations will not change markedly over the next 15 years. New bands are unlikely except perhaps at VLF or to replace existing temporary UHF allocations. A somewhat pressing matter for consideration by the WIA would appear to be the trade-off between wide shared allocations, or narrow exclusive segments at UHF.

The Amateur Radio Service must begin planning soon, both nationally and internationally for WARC 92 and face the IARU Region 3 conference next year with definite proposals.

The Australian radio amateur is permitted a wide range of emission modes, specified on his licence as permitted occupied bandwidths. This approach permits considerable flexibility for the user, both now and in the future and should consequently be retained. Furthermore, there is a direct relationship between the demonstrated theoretical knowledge level of an amateur licence and the complexity of authorised emission modes.

1. Federal Council Motions
   84.09.11
   75.110/1
   71.15.01
   81.127
   86.09.01/1
   82.1203
   77.125
   75.110/2
   84.09.07

RADIODES

BASIC ELECTRONICS[4]

The procession of electrons past any given spot,
Is called electric current and it makes resistors hot.
It also has magnetic fields within it and around,
And we always say that current goes from positive to ground.
But now we know there's plenty of electrons in the earth,
So positive potential merely means there's a dearth,
And electron flow is opposite — with this we have to live.

So when you press your button or rattle on your key,
And energise your massive quad or long wire to a tree —
The movement of electrons past any given stop,
Is what gives you your power — but you need not feel a clot
If you think the current's flowing down from positive to ground,
Or electrons go off sideways and then spin round and round —
So long as you can tune your rig for signals pure and true,
And someone gives an answer every time you call CQ.

—"Hambard" (Originally printed in the Nigerian ARS Newsletter 1970s)

VHF UHF — an expanding world

Eric Jamieson VK5LP
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All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JA2IGY	*Mie (Near Nagoya)*
50.075	VS6SIX	*Hong Kong*
50.090	KH6EQI	*Honolulu*
52.013	P29BPL	*Loloata Island*
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.310	ZL3MHF	*Hornby*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.330	VK3RGG	*Geelong*[1]
52.345	VK4ABP	*Longreach*
52.350	VK6RTU	*Kalgoorlie*
52.370	VK7RST	*Hobart*
52.418	VK0MA	*Mawson*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.435	VK3RMV	*Hamilton*
52.440	VK4RTL	*Townsville*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52.470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
144.022	VK6RBS	*Busselton*[2]
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley*
144.445	VK4RIK	*Cairns*[1]
144.445	VK4RTL	*Townsville*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144.480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
145.000	VK6RPH	*Perth*
432.066	VK6RBS	*Busselton*[2]
432.160	VK6RPR	*Nedlands*
432.410	VK6RTT	*Wickham*
432.420	VK2RSY	*Sydney*
432.435	VK3RMV	*Hamilton*
432.440	VK4RBB	*Brisbane*
432.445	VK4RIK	*Cairns*
432.445	VK4RTL	*Townsville*
432.450	VK3RAI	*MacLeod*
432.535	VK3RMB	*Mount Buninyong*
432.540	VK4RAR	*Rockhampton*
1296.198	VK6RBS	*Busselton*[2]
1296.420	VK2RSY	*Sydney*
1296.445	VK4RIK	*Cairns*
1296.480	VK6RPR	*Nedlands*
10300.000	VK6RVF	*Roleystone*
10445.000	VK4RIK	*Cairns*

1. These are beacons which are listed for the first time as the result of information received during the month.
2. The three Busselton beacons are shown with frequency changes due to a comment in the August issue of *The West Australian VHF Group Bulletin* which said "It was reported last month that the Busselton beacon had been repaired after a recent failure. Significant credit should go to Don Graham VK6HK, who rebuilt the oscillator. The beacon is now operating on 144.022 MHz, on two-metres, and on multiples of this on the 70 centimetre and 23 centimetre bands. Frequency stability is apparently now very good."

From the same bulletin is a comment that the radome has disappeared from the 23 centimetre antenna on the Nedlands beacon. The radome. fashioned from an ice cream contained, has been in the weather for several years, so its loss was not considered too serious!

THE BEACON ISSUE

It seems my blast in August is bearing some results! A number of communications have been received for which I say thank you. It even brought a response from the Federal Office, via Peter Gamble VK3YRP, but there are still many answers needed yet. It appears at this date, 14/9, that nothing has been heard regarding the following beacons:

VK2RHV, VK2RGB, VK2RCW, VK1RCC, VK3RTG, VK3RMB, VK4ABP, VK4RTT, VK4RBB, VK4RAR, VK6RTT, VK6RTU, VK6RPH, VK6RTW, VK6RPB, VK6RPR, VK6RVF, VK7RNT, VK7RMC, VK7RST, VK8VF and P29BPL.

If the present official custodians of these beacons do not feel any need to write, perhaps there are others in the same areas sufficiently interested to prod the custodians into doing the right thing or even writing the required information themselves, to me. If time can be found, all I really need, I suppose, is the frequency, call sign and location of the beacon and whether it is operational or not. But it would be of some value to know the power output, operating mode and antenna system, also height above sea level, if known. Can I plead again for some more co-operation please! ! !

As a matter of interest, a letter from Steve VK4KHQ, at Mount Isa, indicates the Mount Isa Group are looking to establish a two-metre beacon on 144.440 MHz before long, this frequency having been reserved through FTAC. Townsville and Cairns Groups please not this in any sorting out of frequencies you may be undertaking.

Steve says his VK4KHQ keyer, on 52.060, now runs a 15 second CQ call with a five second break (or it may be on 52.050 if he is actually sitting in front of the equipment and able to answer a call promptly, and/or change frequency as required). The keyer can be heard for intermittent periods between 0100 and 0500 and again between 1500 and 1700 UTC, Monday to Friday. Weekend operation is very spasmodic.

On 19/7, Steve VK4KHQ, has an SSB contact with Mike VK8ZMA, in Alice Springs, on 52.050 MHz at 0525 while he (Steve) was portable at Karumba, on the Gulf of Carpentaria, using 10 watts PEP to a quarter-wave whip on his 4WD vehicle. That was his only contact during a two week stay, but then he added "...80 percent fishing and 20 percent radio!" On the way back to Mount Isa he ran the Tono 7000E into the six-metre transverter via the FT707, using the same CW identification. He received no calls but would like to hear from anyone who may have heard any of his signal.

Steve also sends some information regarding the Ross Hull which I will ass to other information received from various sources and send it to the Federal Contest Manager at the appropriate time.

THE MICROWAVE BANDS

Wally VK6KZ, a long time proponent of better band sharing facilities for the amateur population, particularly in the microwave regions, and one who has done more than just talk about the problem, has received a letter from the Acting Assistant Secretary, Spectrum Policy and Planning Branch of DOC, Mr Greeney, in response to an earlier letter sent to the Branch. There seems no reason why it should not be printed as the contents are of concern to quite a proportion of the amateur population. Dated August 13, 1987, it reads:

"Dear Mr Howse: I refer to your letter of May 25, 1987, regarding our earlier correspondence about exclusive spectrum allocations for the Amateur Radio Service at frequencies above 144 MHz.

"You requested that consideration be given to the redesignation of a 10 MHz segment (2300-2310 MHz) from the proposed Multi-point Distribution Service (MDS) band plan as a primary Amateur Service allocation. As you have already noted from a report in the Press, the Department is having difficulty accommodating the number of MDS applications already received, within the limited spectrum being proposed for the MDS services. Because of this very high demand for the primary fixed point-to-multipoint services in the 2300 to 1450 band, reallocation of a 10 MHz segment for amateur services as suggested in your letter, is not considered feasible. However the frequency assignment strategy being proposed for MDS reduces the likelihood of MDS assignments being made in the 2300-2310 MHz segment in the short term. In the longer term it is likely that in many areas, particularly in capital cities, assignments for MDS channels in this 10 MHz segment will be necessary. When this happens, amateur operators will have to use alternative amateur allocations for 'moonbounce' propagation experiments.

"Your letter also sought advice concerning the procedure to be followed so that more primary allocations of spectrum can be made available to the Amateur Radio Service, within the existing shared microwave bands. Quite clearly, there is a tremendous increase in the demand for microwave services in Australia. While the current sharing situation permits both licenced services and the Amateur Radio Service to share parts of the microwave bands there is generally no scope for making additional exclusive allocations to the Amateur Radio Service, with the consequent reduction in the availability of microwave spectrum for the important microwave services which currently share spectrum with the Amateur Radio Service.

"There are already a number of primary allocations to the Amateur Radio Service, as indicated in Dr McDonnell's advice to you dated May 13, 1987, as well as secondary allocations spread throughout the microwave frequency bands.

"I regret to advise you that this Department is not able to negotiate the allocation of additional primary Amateur Service allocations in the microwave frequency bands."

I have not spoken to Wally recently, but I expect this reply is really what he expected to get. Clearly, the implications are, that over a period of time, whether it be five years or 50 years, one by one the microwave bands will cease to have any Amateur Radio Service allocations, shared or otherwise, as spectrum demands increase from the "paying business world".

I can appreciate the position the Department is placed in. There is unquestionably a continuing

high pressure demand from industry and government departments for more and more spectrum space. Most of those areas would be lucky to have one radio amateur on their staff, let alone any more. Thus there is never going to be any thought or consideration given to those who experiment and we would be seen by most at decision-making-level as a bunch of public nuisances.

As the letter says "I regret to advise you that this Department is not able to negotiate the allocation of additional primary Amateur Radio Service allocations in the microwave frequency bands" it means the door has been well and truly shut in our faces because there is no longer any avenue open, even for negotiation for primary allocations in the microwave regions, no matter how small the segment may be. If the same philosophy is applied to the shared allocations, then we are in for a very lean time in the future. At least you tried Wally.

THE OVERSEAS SCENE

I had been waiting for Bill Tynan's (W3XO) *QST* pages *The World Above 50 MHz* for September to see what sort of Es season they had during the Northern Hemisphere summer period, which has just concluded. As Australian amateurs of the VHF world know, we had another excellent summer Es period last December, and the almost equally as good one the year before was not really matched by a similar set of conditions during the northern summer. The notes have arrived so I can now tell you haw they fared in the US.

Bill's opening paragraph reads "The 1987 summer Es season has truly been one of most outstanding since amateurs first discovered the mode in the early 30s. Not only were six and two metres affected, but also our one and a quarter metre band produced its first documented two-way Sporadic-E contact."

Of particular interest to the US amateurs were the contacts available across the Atlantic to Europe, beginning during the evening about 2200 UTC (remember, we are talking about the Northern Hemisphere. . .5LP). Signals were not particularly strong but the band seemed alive with G stations until they finally faded out around 0045. During this excellent 50 MHz opening the band also opened with Es on two metres over a large area of the US. One other important opening was the reception of the OX3VHF beacon on Greenland, but all attempts to raise OX3LX, by phone, failed so contacts were missed.

The 50 MHz openings extended beyond England to Holland and Finland, where, in the latter country, OH1ZAA reported completing 10 to six metre crossband contacts with VE1YX, W2CAP/1, and WA1EKV, between 2157 and 2224 UTC. As if all these great openings were not enough, around 0315 K1TOL worked KH6IAA, in Hawaii.

Two days later, on 19/6, during the afternoon, probably the greatest Es opening between North America and Europe ever recorded, with W9IP/2 in northern New York State listing a total of 86 European stations in G, GI, GW GM, GJ, EI, PA0, F and CT, beginning at 1820 and lasting for about three hours. WA1OUB worked 94 and K1TOL 98. Included in the list from WA1OUB are PA0XMA and F6DBI, whilst K1TOL worked LA and PH1.

The good Es conditions certainly were widespread over the Northern Hemisphere; Bill reports JA1VOK, having worked KH6IJ and KH6JJI around 2230 on 15/6 with signals to S9 plus 30 dB! JA1VOK also passed on the news that BV0AE, operating from Taiwan, 5/6 to 11/6, had contacts with all JA districts plus HL9TM and KG6DX. In fact, on this matter, a report from the Japanese *Ham Radio* magazine (courtesy Graham VK6RO) lists a total of 1663 contacts with the two highest areas being JA1 with 452 and JA3 with 439 contacts. There were four HL contacts and VS6SIX beacon being heard at 0326 on 8/6. The first-ever BV contacts during these days were made to the following stations, being the first worked for that area:
JA1VOK, JE2KCP, JA3EGE, JA5EPQ, JA6RJK, JA7QVI, JA8RC, JA9SJI and JR0PFP, also JA4MBM.

During the period 22/5 to 24/6, JA stations had contacts HL1, HL2, HL4, HL5, HL8, HL9, HL0, BV, VS6 and KH6. It is interesting to note there appear to have been no direct contacts between JA and W although there were some reports of JAs having been heard. Perhaps everyone was concentrating on the Europeans!

Bill W3XO, reports there had been more Es double-hop that summer than he could ever remember and, as it coincided with the VFO QSO Party, more stations were on, with six metres being open for almost the whole time. Portugal was worked by many East Coast stations and as far inland as K0. G stations were hearing the Ws but could not break through the contest QRM!

The weekend of the QSO Party produced some great two metre Es DX. On 14.6, WA7JTM, operated portable from 11000 foot Mount Graham in Arizona, and had 32 Es contacts. Stations were being worked simultaneously at single and double hop distances. KI4CI worked 50 Es stations spread over six US States and many worked XE1FUX/XE2 for a new country. It appears the longest Es contact was 1976.7 miles. A further excellent opening started on 29.6 and lasted for over five hours!pe Whilst all this Es activity was going on it is interesting to record that suitable tropo-ducting conditions prevailed allowing KH6HME to work 120 contact on two metres as well as a number of 70 centimetre contacts, and to K6QXY, in San Francisco, on 23 centimetres.

Finally, what was probably the greatest interest to the US amateurs was the first documented two-way contact via Es on their 220 MHz band between K5UGM and W5HUQ. It was due to the very high intensity of Es on two metres which prompted K5UGM to look on 220 MHz where he finally found W5HUQ, after first failing to make a contact. The final signals were S9 plus 50 dB. K5UGM runs 600 watts to a Boomer antenna at 40 feet with a GaAsFET preamplifier with 0.3 dB NF helping the receiver. W5HUQ runs 20 watts to a Boomer with a 0.5 dB preamplifier. It was the only QSO exchanged despite others trying so it was probably in the same realm as the attempt here last year when Roger VK5NY, almost made it to Brisbane on 70 cm and believed to have been Es. We should hear more of these type of contacts as interest increases and more operators become aware that such things do happen occasionally, probably very occasionally!

THE EME SCENE

Doug VK3UM, continues to have successful contacts via the moon, mostly random contacts. On 17/7 at 2345 he worked DL9KR, with 449 sent and 0 received; on 18/7 at 1730 WA9FWD 0 and 0; 1800 W0SD 0 and 0; 0014 OE5JFL 349 and 449; 0040 PA3CSG 439 and 429 (this being a new country); on 14/8 at 2245 DL6WU 0 and 0; on 15/8 at 1515 W9IP 449 and 439; 1530 NC1I 549 and 549; 2300 FD1FHI 439 and 439; 16/8 at 1630 K8WW 439 and 539; 1707 K2YUH 549 and 559, and 1745 K2YUH 439 and 439.

Doug is still continuing to fine-tune the whole set-up and the results he is getting certainly justifies the efforts being made.

While dealing with moonbounce there is a short comment in the August 1987 *The West Australian VHF Group Bulletin* which said "the Dubus magazine recently contained details of somebody working moonbounce on 10 GHz with only 100 mW output power. Problems were experienced on SSB however and the operator had to increase to 700 mW. It is amazing what one can achieve with a radio telescope dish antenna!"

NEW CALEDONIA

A postcard has arrived from Phillip Hardstaff of the South Pacific Commission in Noumea, with a few details of activity from that country. His home call is VK3XGK and he will be at Noumea for one more year with the call sign FK1TS. He has just bought an FT690 MkII and will be building a linear and a log Yagi antenna very soon. At the moment he is active on six metres running barefoot.

Next year, for awhile, he will be in the Cook Islands, ZK1, and hopes to get six metres running there.

On 22/7 from 0800 he had very strong signals from Australian television on 51.750 MHz, and New Zealand television on 50.740 MHz. He called and called, but no one answered. FK8EB was also calling. I can understand his frustrations!

Thanks for the card, Phillip. Please let me have some more information in advance if you can for the Cook Islands adventure so that the VK operators can look for you. One would expect the contacts, if any, to be available during the VK morning hours.

A further letter from Phillip shows, from a copy of his log, that he worked ZL2TPY on 52.050 at 0535 on 27/7 with three watts from the FT690 and received a 3 x 3 report. Other FK stations listed are FK8AX, FK8FL and FK1SB. He is also going to investigate the beacon I have been listing as operating from Noumea (which I have now removed) as he has not heard it operating since being there.

Phillip is also interested in trying two metres and will be looking to invest in a multi-mode unit eventually. This can be coupled to an already available 160 watt amplifier. Phillip would be most interested in operators who would be prepared to try two metres to FK on a regular basis to see what can be achieved. If anyone would like to try, please contact Phillip Hardstaff FK1TS, South Pacific Commission, BP D5 Noumea Cedex, New Caledonia; I am sure he would be pleased to hear from you. This will also give him the added incentive to get two metres on the air!

Phillip's Cook Island run will probably take place around November 1988 and is hoping to work on six metres from both the North and South Islands which represent two DXCC countries. On the return visit he would like to include stopovers on 5W1 and ZK2. So, there exists some future exciting possibilities for VK and ZL stations. Last year his work took him through 3D2, FO, ZK1 and ZL, but unfortunately he did not have any six metre equipment at the time. Most days his work keeps him in his workshop where the equipment is, so he is only a step or two away from daytime six metre operations. Operators should bear this in mind! He offers a ready QSL for any contacts made and asks for a QSL direct, no IRCs etc, as any card to him will get one back by air mail the same day the other one is received. One could not ask for better than that.

GEELONG ACTIVITY

Peter James VK3AWY, has elaborated on some news of the activity taking place in the Geelong camp. Along with news of the status of the beacons there, he says the six metre beacon will be returned to Mount Anakie after repairs in November. It currently runs 20 watts out to a pair of crossed dipoles with 850 Hz shift FSK identification. The Geelong Amateur Radio Club also hold licences for beacons on 144 and 432 MHz. The two metre beacon for 144.530 MHz is under construction and could be ready by November and the 432.530 MHz beacon is on the drawing board and is not expected to be installed until late in 1988. Mount Anakie is also the home of the Geelong two metre repeaters, VK3RGL on 147.000 MHz.

The Geelong members are currently constructing a double brick building to house all their equipment on the mountain and will contain room for four 19 inch racks, workbench, sealed battery compartment, etc, and will have a reinforced concrete roof and a plate steel door, so it sounds like a fortress! Inside there will also eventually be a 432 MHz repeater, UHF CB repeater and a few other things too. Incidentally, Mount Anakie is about 35 km north of Geelong and 398 metres above sea level.

OTHER MATTERS

I note from *Practical Wireless* (courtesy Steve VK5AIM) that Geoff GJ4ICD, uses a professional

panoramic receiving monitor to check the VHF bands spectrum and this enables him to "see" very easily the development and movement of E-layer propagation. From this he produces daily charts in histogram form. (As a matter of interest, Bob VK5ZRO, used to do this very thing. . .5LP).

From the same publication I note advice being given for UK amateurs not to exceed their licenced ERP of 100 watts. Apparently France has been running a subscription television service for some years well above 50 MHz. Now, however, they are licencing many stations on Channel 2, vision on 40.250 MHz and AM sound on 55.750 MHz. The stations can be on 21 hours a day. Some transmissions are not encoded but many are. (According to GJ4ICD, the late-night programs are quite disgusting, but very popular!). The opinion seems to be in the UK that the French authorities are looking for any excuse to get the UK government to revoke all the amateur 50 MHz licences, especially in view of the fact that the 50 MHz part of the VHF spectrum is allocated primarily to broadcast-use in ITU Region 1.

A letter has come from Wal VK2YHW, near Lismore, with some thoughts on the Ross Hull Contest. These details will also be forwarded to the Federal Contest Manager. As with all other correspondence, I will give readers a idea what others are saying in space which I hope to be able to devote to the Ross Hull before long. Thanks Wal.

DXPEDITION

Neville VK4ZNC, is currently planning a November/December DXpedition to three countries. Two of these will be unique to the six-metre enthusiast.

This will be the last of Neville's trips because of the upgrading of the sun spot cycle, so do not miss this opportunity, if Neville can achieve it. Interested? Then keep your antennas pointed to the north-east Pacific area with the receiver on 52.050 MHz.

Also, don't forget to listen for Dave VK0HI, on 52.170 MHz with a 180 degree difference in beam headings. Doesn't life become difficult? Good luck with all, or one, or maybe two, even three and if it is four new countries! Do not buy a Lottery Ticket, as you have hit the 'jackpot' and all your luck has run out for 1987, but 1988 is not far away. Good luck, from near the water at Meningie. **THE**

MENINGIE MOVE

The move has been made and VK5LP is now firmly entrenched about a decent golf ball drive from Lake Albert, at Meningie. Please note the new address at the top of these lines and that of the house number.

The move was made during the week beginning 24/8. Everything went like clockwork and there were no hitches except for the rain! It simply poured during more than half the loading operations, as if the Hills were having a final say! The welcome at Meningie was also in the rain, but it soon cleared and almost everything went inside quite dry. The house part is set up reasonably for our comfort but all the amateur radio equipment is still in cartons. New benches and shelves are being installed as I write these notes, so in the next few days I should be able to unpack some equipment after the benches have been given a finish of Estapol®

I have been a little concerned at the height of a rise close to me in the south-easterly direction. As I could find no one to measure it for me I laboriously did it with a spirit level, a long straight piece of aluminium tube (50 mm) and a calibrated vertical tube. The ground distance from the position where the tower will stand to the top of the rise is 195 metres (640 feet) and it's height is 19.35 metres (63'6"). That is about six metres higher than I originally thought, which is a nuisance but well within the capabilities of my 75 foot winch-up tower. It means I cannot make as much use of a secondary tower which could go to 40 feet as I envisaged. Nevertheless, once the rise is topped there is nothing in the way for a very long distance and, in a westerly direction I will be looking straight at the ocean being well above the intervening land. I am aiming to be back on the air in November which will give me a chance to try the site for summer Es.

Closing with two thoughts for the month: *Fame is essential to a painter but harmful to a forger;* and *Being put on a pedestal has disadvantages which you are apt to discover the first time you fail to watch your step!*

Everyone will now have to forget me as *The Voice in the Hills* because that no longer applies. I have now become *The Voice by the Lake.*

73. Eric VK5LP

ar

BILL VK4WL

Bill VK4WL, lives on Prince of Wales Island, which is located in Torres Strait between Cape York and New Guinea. It is only a short distance from Thursday Island.

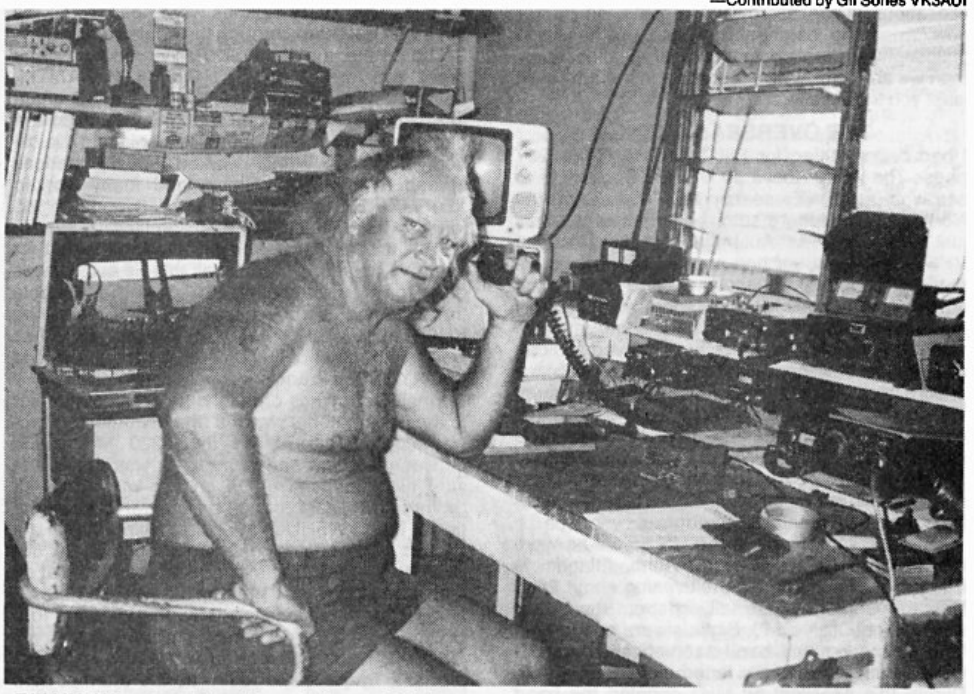
Bill enjoys a very pleasant QTH overlooking the beach. He is operational on six and two metres, as well as HF.

During the Sporadic E season Bill welcomes contacts on two and six metres.

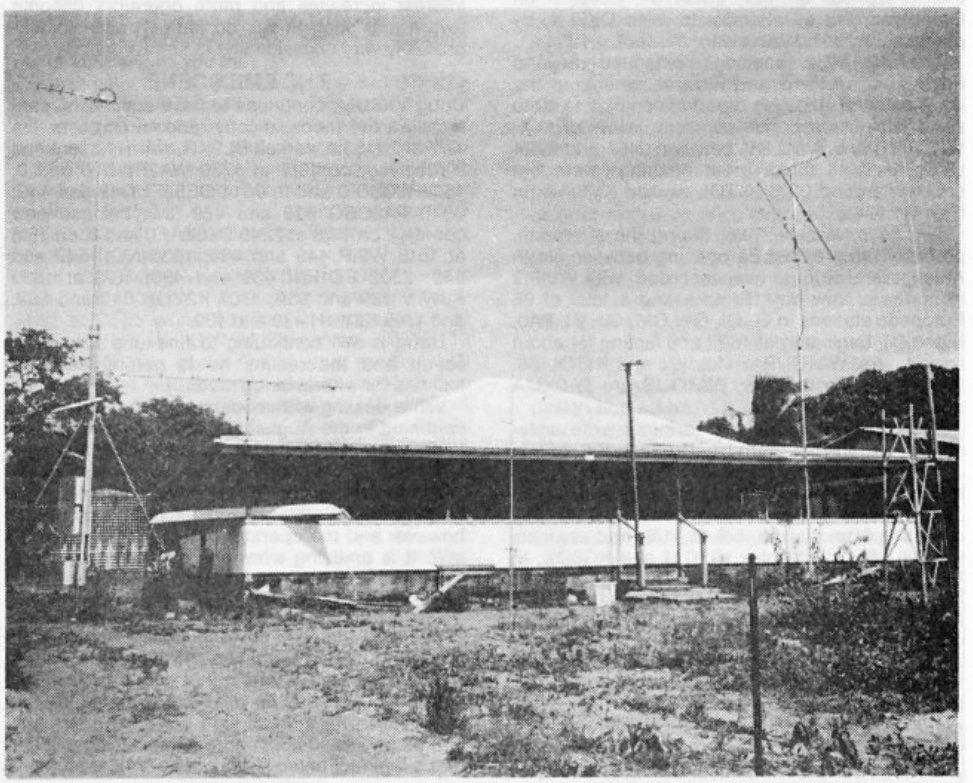
Bill's location is just about as far north as you can work and still be working within Australia!

Watch for him on six and two metres during the coming Sporadic E season.

—Contributed by Gil Sones VK3AUI



Bill VK4WL, operating from Prince of Wales Island.



The QTH on Prince of Wales Island, home to Bill VK4WL.

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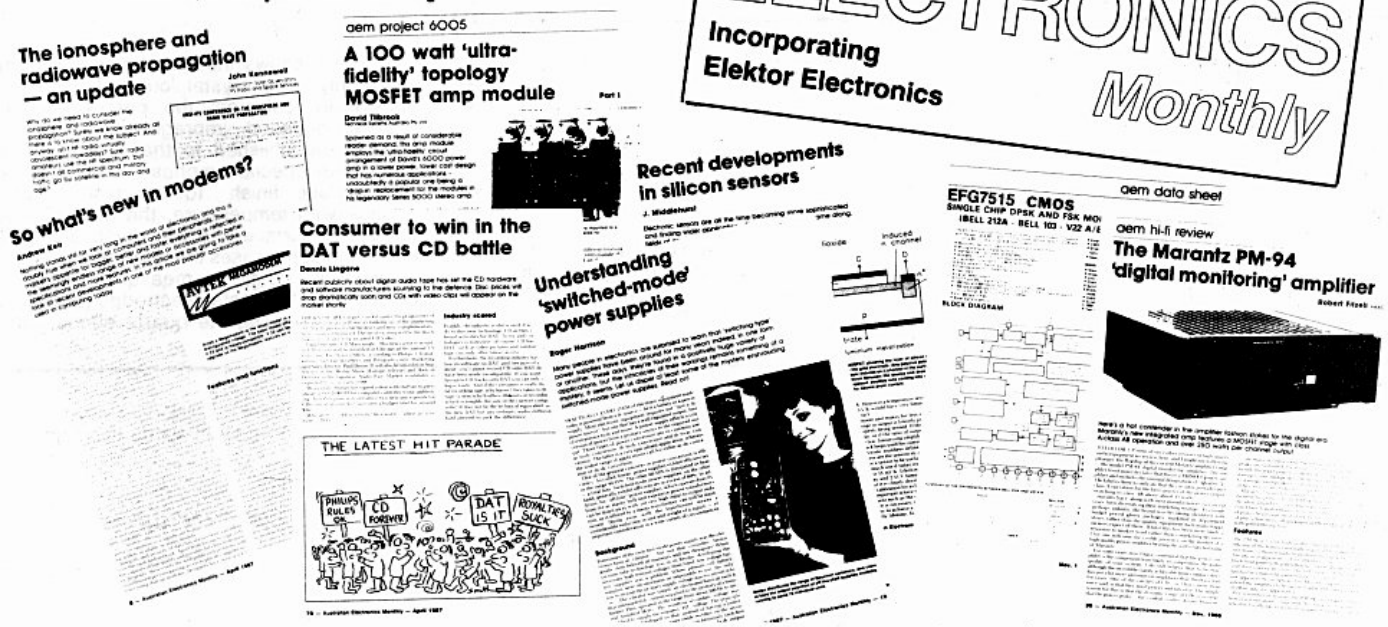

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Novice Notes

QUARTZ RESONATORS (Crystals)

Drew Diamond VK3XU
Lot 2, Gatters Road, Wonga Park, Vic. 3115

The overall efficiency of present day communications and broadcasting would not be possible but for the development of modern quartz oscillators, commonly known as 'crystals'. They are manufactured from crystalline quartz, SiO_2, which occurs in nature as a rhombohedral crystal.

Quartz is a piezoelectric material. Piezoelectricity is electric polarisation produced by mechanical strain. Conversely, a mechanical strain is produced in a crystal by a polarising electric field. As suitably prepared slices of the crystal make efficient vibrators, these slices can therefore be employed as the frequency determining elements in electronic circuits such as high stability oscillators and narrow band filters.

The quartz slices are designed to vibrate with a mode of motion that permits, among other considerations, rather small pieces of quartz to be used.

Crystalline quartz grown artificially in autoclaves (cultured quartz) is now widely used in place of natural quartz for the manufacture of resonators and optical instruments.

Figure 1 shows the orientation of the most commonly used crystal 'cuts'. The slices as shown are cut from the parent crystal by circular diamond impregnated saws, then lapped and polished to the required dimensions with special emphasis on the flatness and surface finish. To minimise frequency change with temperature, the angle between the major surface and the crystalline axis is critical. In some cases the tolerance is ± 15 sec of arc. This angle is measured in an Xray goniometer. The metal electrodes (usually gold or silver), coupling the quartz element to the

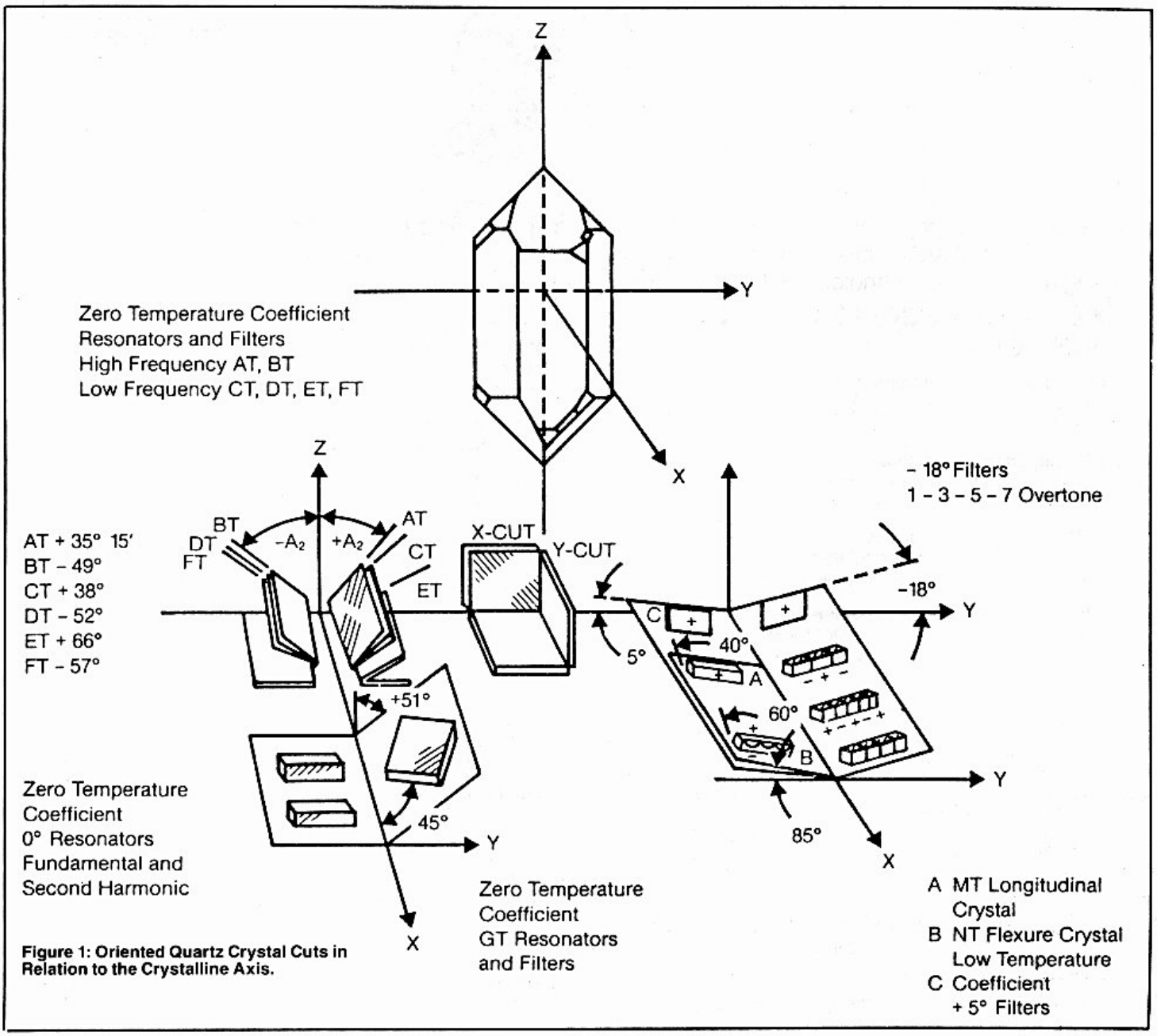

Figure 1: Oriented Quartz Crystal Cuts in Relation to the Crystalline Axis.

external circuit are deposited onto the surface by evaporation at low pressures. Most metal encased crystals are evacuated, and are back bled to atmospheric pressure with inert nitrogen (this is done so that no moisture remains, nor can enter the sealed enclosure). Resonators designed for high precision oscillators are mounted in evacuated all-glass enclosures.

In an oscillator, the resonator functions as a series tuned circuit of extremely high Q which, in some cases is greater than two-million! Oscillators are designed to employ the crystal so that full advantage is taken of this property. At certain frequencies, oscillators employing well made crystals of modern design may have a daily frequency drift as low as one part in 10^{11} and a short term stability (over an averaging time of one second) in the order of one part in 10^{11}. A number of 5 MHz oscillators of this performance made in the Telecom Research Laboratories have been in continuous service for more than 12 years.

RESONANT FREQUENCY

The resonant frequency of a quartz crystal is generally determined by the dimensions of the plate combined with the mode in which it vibrates.

Resonant frequencies of standard quartz plates range from about 1 kHz to 150 MHz.

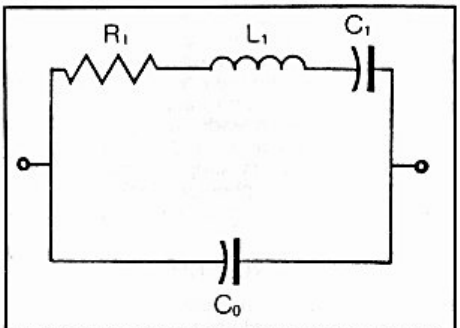

Figure 2: Equivalent Circuit of a Vibrating Crystal.

The equivalent circuit of a vibrating crystal is useful in explaining the basic concepts governing the crystal's performance. See Figure 2.

C_0 represents the static capacitance, which is the sum of the capacitance between the electrodes, and capacitance added by the wire leads and holder.

The R_1, L_1, C_1 branch is known as the motional arm. C_1 represents mass, and R_1 is the sum of the bulk crystal losses.

C_0 — Static Capacitance (electrode plus holder).
C_1 — Motional Capacitance (mechanical elasticity).
L_1 — Motional Inductance (mass).
R_1 — Equivalent Series Resistance (energy loss).

All crystals may be operated in either series mode (resonance — which is nearly equal to the mechanical resonance of the crystal) or parallel mode (anti-resonance). See Figure 3.

The latter is generally more sensitive to external parameter changes with respect to stray capacitance. Therefore, it is recommended to oscillate crystals near the series resonant frequency. In practice, the difference in these two frequencies is a small amount, and is dependent upon circuit capacitance, inductance and drive level, the latter having greater effect in overtone operation (more about overtone mode later).

TEMPERATURE COEFFICIENT

Temperature coefficient is the relationship between frequency stability or deviation with changes in temperature, and is expressed in parts per million (PPM) change over the operating temperature range for the crystal. The mode of vibration, the orientation of the plate in relation to the axis of the quartz, and the dimensions of the plate determine the temperature coefficient.

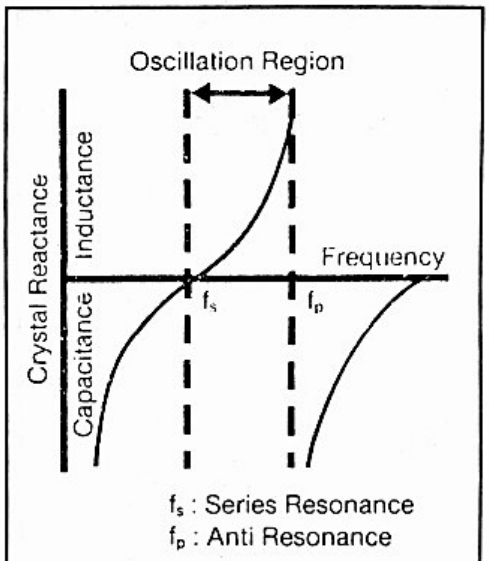

Figure 3: Relationship of Series Resonance to Parallel Resonance (Anti-Resonance).

RESISTANCE AND Q FACTOR

Resistance is the equivalent impedance of the quartz resonator and it determines the Q factor of a quartz crystal. High crystal Qs are obtained by reducing mechanical and acoustic energy losses, which are lumped together as R_1.

The crystal Q is related to the series resonant frequency fs, the motional inductance L, and the equivalent series resistance R_1 by the formula:

$$Q = \frac{2\pi f s L_1}{R_1}$$

A high Q factor, ie a low value for R, reduces the influence of external parameters, such as variations in supply voltage, load, temperature and oscillator components.

SPURIOUS MODES

Spurious (unwanted) modes are non-harmonic modes of vibration of the quartz plate. Since spurious modes are inherent in every crystal resonator, they are suppressed by special design techniques.

DRIVE LEVEL

Drive level, normally expressed in milliwatts, is the dissipated power between the two crystal leads. To assure optimum performance and stability; the level should be the minimum necessary to start and maintain the crystal in oscillation. Excessive drive can result in fracture of the crystal plate, unacceptable frequency drift and poor aging characteristics. Typical maximum drive levels for fundamental crystals would be in the range of 5 to 10 mW, and about 3 mW for overtone crystals.

FREQUENCY TOLERANCE

Frequency tolerance is the amount of frequency deviation (plus or minus) from the desired operating frequency at a specific temperature. It should be noted that commercially, the accuracy requirement for crystal tolerance is expressed as a percentage.

AGING

Aging of a quartz crystal is a general term applied to any change in parameters of a crystal unit taking place over a period of time. To prevent severe aging, circuits should be designed to keep the drive level at the absolute minimum.

LOAD CAPACITY

The load capacity is the sum of the capacity of the crystal socket and any other capacitance across the crystal in an oscillator.

ACKNOWLEDGMENT

The text and drawings above have been adapted from *Telecom Australia Research Laboratories Open Days Handout SE8/H 1985.* The permission of the Director Research, of Telecom Australia to publish the aforesaid material, and Mr J Freeman for his valuable comments is hereby acknowledged.

OVERTONE MODE

At frequencies above about 21 MHz, it is usual to go to overtone oscillators. Almost any modern crystal can be made to oscillate on its third, fifth, seventh, etc overtone, which is roughly 3, 5, 7 times the frequency for which the crystal was ground or etched. In overtone operation, the crystal in effect breaks up into an ODD number of layers, as shown in the sectional view of an AT cut crystal. See Figure 4.

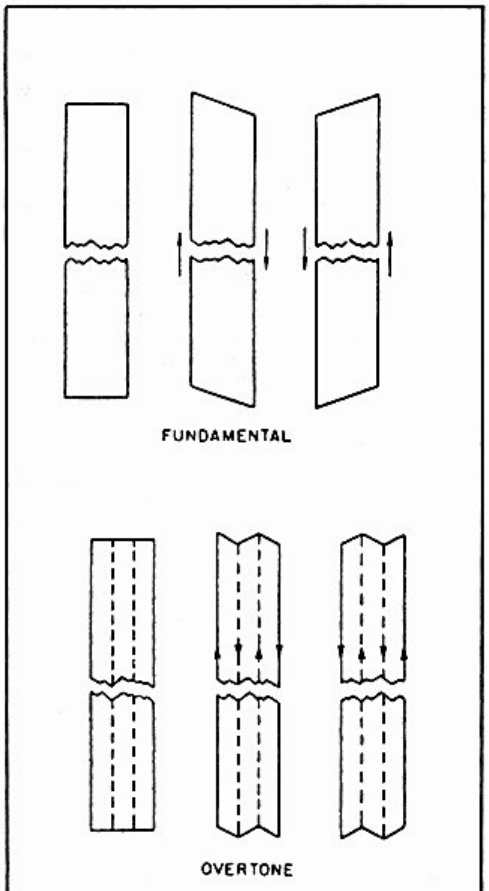

Figure 4: Greatly magnified edge views of quartz crystals, showing the mechanical distortion effect when voltage is applied across the crystal. At the left is a fundamental crystal, and at the right is one oscillating on its third overtone. Frequency of oscillation generally depends on crystal thickness — the thinner the crystal the higher the frequency.

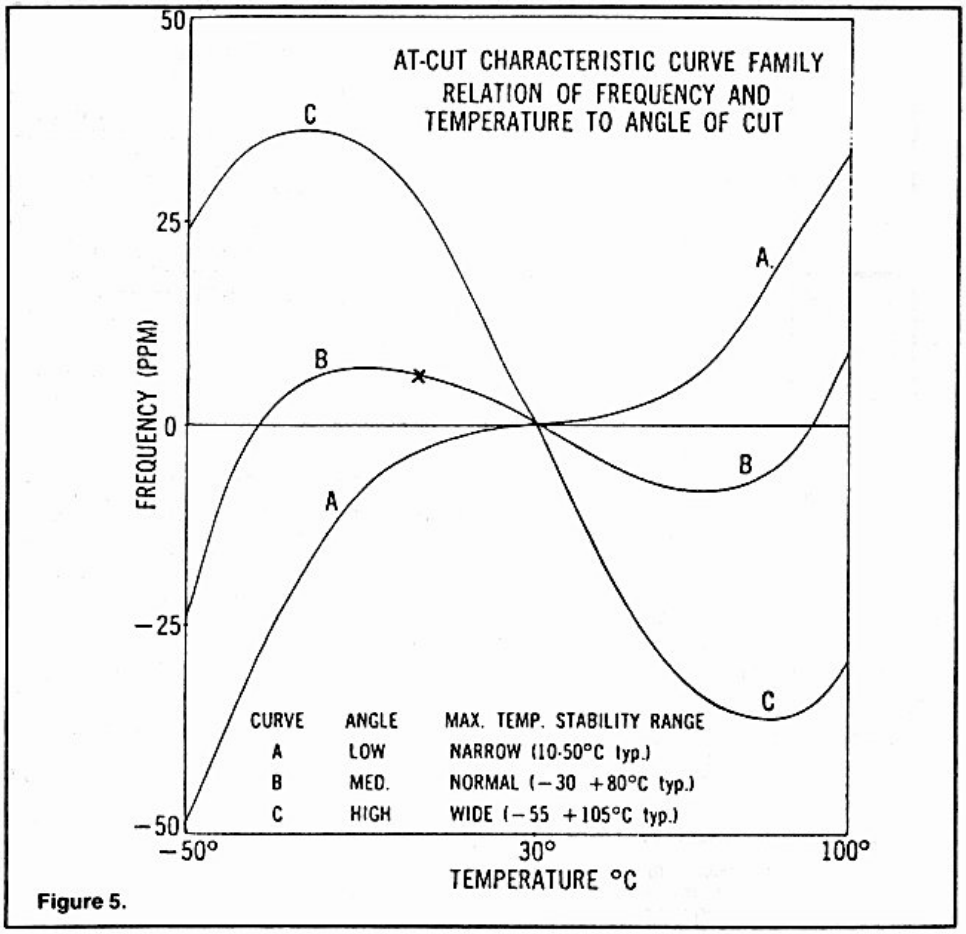

Figure 5.

The complete oscillation cycle is illustrated. Because of mechanical considerations, the overtone frequency will not be an exact multiple of the fundamental frequency, though close to it. Only the odd multiples are available as overtones; there is no such thing as an even numbered overtone. The third, fifth, seventh and ninth overtones can be readily obtained with suitably processed crystals and circuit design.

TEMPERATURE versus FREQUENCY CHARACTERISTICS

Figure 5 shows a typical set of curves for frequency versus temperature for an AT cut crystal. It will be seen that the angle of 'cut' is a compromise, depending on the required temperature range. Curve A for a low angle cut provides close frequency control near 30 degrees Celsius, whereas curve C would provide less stringent control but a wider temperature range is accommodated for a reasonably well maintained oscillation frequency. For oven control of the crystal temperature; the crystal is cut to operate at the 'turn over' point (bottom of the trough) of the designated temperature, so giving a tighter frequency control.

The term "parts per million" (PPM) means that for every MHz of crystal frequency; the actual oscillating frequency moves in direct proportion by the amount indicated. For example; a 7 MHz crystal cut for curve B and set accurately on its nominal frequency at 30 degrees Celsius, but operating at 10 degrees Celsius would be shifted upwards in frequency by 6 (PPM) x 7 (MHz) = 42 Hz. Used in a simple transmitter this shift would not be significant, but if this crystal frequency was multiplied up to some higher final frequency; then this change would be directly multiplied by the harmonic number, and could be a problem.

CASE STYLES

Figure 6 illustrates the three most popular crystal holders used by experimenters. Type HC-6 (English style D) would be appropriate where size is not a problem, and also where the user wishes to change crystals at will, as the size is not so small as to be easily lost.

Type HC-25 (English type K) lend themselves to relatively small scale work. A typical application would be for use in transceivers and computers where the crystal is plugged in and used on a long term basis. The HC-18 is similar, but has 'flying leads' intended for direct soldering into a circuit on a permanent basis. Most electronics parts suppliers now have a number of the most popular clock frequency crystals ex-stock at low prices, generally HC-18 and HC-25 styles.

SPECIFYING A CRYSTAL

As far as possible, the following information should be provided when a crystal is ordered from the makers:

* The exact frequency.

* Mode of operation (eg fundamental, third, fifth overtone etc).

* Operating mode, ie series or parallel (state load C for parallel operation — typically 30 pF. If in doubt, supply circuit).

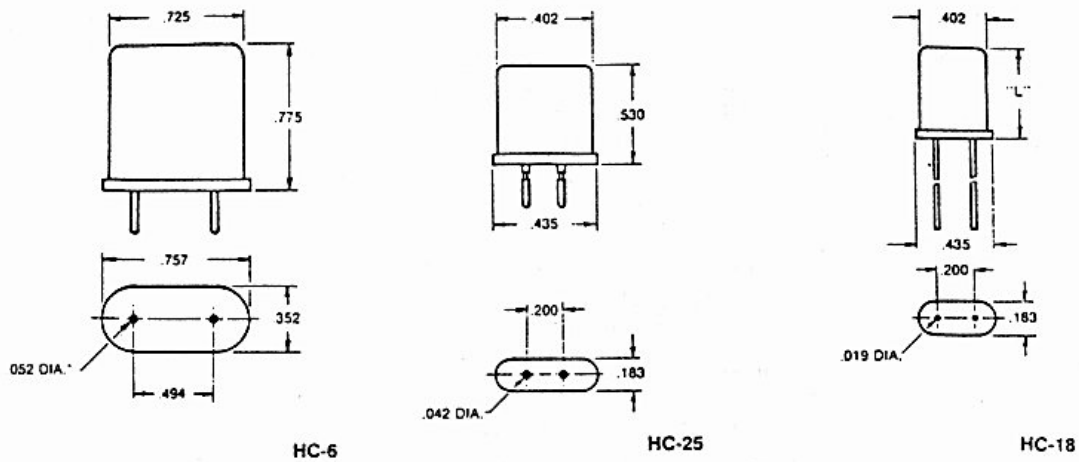

Figure 6: (Please note, measurements are in inches).

* Holder type.

* Expected operating temperature range.

* Temperature stability or frequency tolerance over the expected temperature range (see Figure 5).

* Any additional information if considered appropriate, eg make and model of transceiver and circuit function.

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ar

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Peter Parker VK6NNN

C/- Witchcliffe Post Office, WA. 6286

A BFO for use on an AM receiver to correctly resolve CW and SSB.

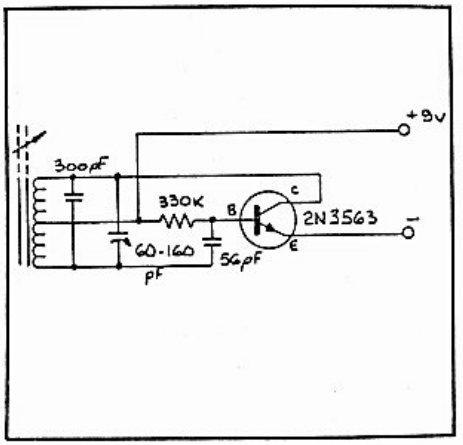
This unit does not need to be connected to the receiver, just placing it on top will usually suffice.

When the BFO is constructed, it is necessary to align it so that it oscillates at around 455 kHz. For the IF transformer, I found a matchstick useful as an alignment tool as it fitted in the alignment hole. The 60-160 pF variable capacitor is varied until 455 kHz is achieved. If turning both the coil and the variable capacitor does not work, the 300 pF capacitor will need to be altered.

ar

COMPONENT LIST

455 kHz IF Transformer
2N3563 Transistor
330 kohm resistor
56 pF Capacitor
300 pF Capacitor
60-160 pF Variable Capacitor
9 volt Battery



RODENT REVELS

John Lingards Sykes G3SRK

7 Hill Top, Lingards Road, Slaithwaite, Huddersfield, HD7 5UA

Never a dull moment as a ship's Radio Officer.

"For two pins I'd ram the Eddystone Light and find out whether rats really leave a sinking ship. If it is true I would be happy to go down on the bridge of my rat-free vessel." The Captain was just about the end of his tether and none of us around the saloon table had any word of comfort.

All ships provide food, accommodation and free transport for *some* rats but the S/S *Edendale* when I was her radio officer in the mid-20s was a rodents' paradise, the most popular rats' boarding house afloat and with a very distinguished clientele. The vessel, a steamship with auxiliary sails or, if you prefer, a sailing ship with auxiliary engine, had been built in the 1880s to serve the Australian immigrant trade but had long since been converted to a bulk-freight carrier without any loss of her classical lines. With her three tall masts, clipper bow and a handsome figurehead representing Eve holding a golden apple in each hand, she aroused interest and admiration wherever she appeared. I am confident that Eastman Kodak made more money from her than did her nominal shareholders. All her officers and crew adored the old lady but not more than her rats, none of whom had ever been seen to leave her. The Chief Officer, hoping against hope that some of his four-footed charges might be tempted to jump ship in Marsailles, a port greatly favoured by rats of all nationalities, had purposefully omitted to affix rat guards to the mooring lines, but all he had to show for it was a whacking big fine and the Captain's formal, if half-hearted reprimand.

After more than a hundred generations of inbreeding it was not surprising that our pedigree pets had developed complete immunity from every known brand of rat poison and disdain from every known breed of cat. Our four non- descript moggies patrolled in pairs during daylight hours, but spent their nights in the crows nest. It was no wonder that the Captain was at his wit's end and the rest of us apathetic, but when the Captain announced that he would pay £50 to any member of the ship's company who could evict his unwanted tenants there was a new surge of interest.

The engine-room staff produced an ingenious spring-loaded catapult intended to flick overboard any rat unwary enough to step on it. It had worked perfectly when tested with one of the Chief-Engineer's shore-going shoes, but no rat approached within a yard of it. A long, slim, well greased plank projecting over the bow and baited with salt pork turned out to be a novel and amusing arrangement for feeding dolphins and its inventor, "Chippy" had visions of patenting the device and selling it to cruise liners, but it didn't drown a single rat. My own attempt, bare electric wires stapled to the wooden deck, failed dismally but how was I to know that a diet that included rubber boots would in the end produce insulated feet? Anyway, I did bag a couple of barefooted seamen and might have got more if a sudden tropical downpour had not short-circuited the ship's generator.

Such then was the state of play as the S/S *Edendale* put into the German port of Bremen, at the mouth of the River Weser. Most of us in the officers mess had either forgotten about the Captain's proffered reward or had given up trying to win it; but not so our young Third Officer. A born romantic and something of a poet, he seems to be the only man aboard to appreciate that 'Hamelin town is in Brunswick' and that 'the River Weser, deep and wide, washes its walls on the southern side.' He had a hunch that the town of the Pied Piper could hold the solution to our difficulty and he determined to go there on his day off. He was well aware that the Pied Piper himself had disappeared into a hollow mountain along with the town's children but he reasoned that over the years the shocked townsfolk could have discovered a better way of dealing with a plague of rats. In the event, the Third Officer's inquiries led him to the Municipality's senior Pest Exterminator, who listened with respect and sympathy to the English youth's story before asking: "What colour are your rats?" On being told that they were common or garden brown he smiled and looked relieved; there was no problem at all! Half a dozen white Siamese fighting rats, if released below decks, would gobble up a ship load of common browns, though naturally it would take a little time. On being asked where white Siamese fighting rats could be purchased it 'transpired' that the Pied Piper's successor had only that morning received a small consignment direct from Bangkok and would be happy to release not more than six at a nominal price of 50 000 Marks (about £3.00) each, plus something for a travelling cage. Nineteen pounds and six caged rats quickly changed hands with much goodwill on both sides. Nemesis was about to strike.

Back on board the S/S *Edendale* the Captain, looking 10 years younger, congratulated his junior officer and handed over £20.00 with an assurance that the money would not be deducted from the reward which would become payable when the ship arrived rat-free at a British port.

The white Siamese fighting rats certainly looked their part, half as big again as our poor Brownies and, with teeth like marlinspikes, but in the officers' mess rejoicing was more muted than might have been expected. In a strange way I think we all felt a bit self-conscious and not a little ashamed over releasing the rodent equivalent of Bengal Tigers among our innocent and unsuspecting fellow travellers. Such stratagems might be acceptable in Siam and even in Hamelin, but the S/S *Edendale* flew the red ensign and whatever the name of the present game, it wasn't cricket. Nevertheless, when our cargo of maize had been discharged, a white Frankenstein was released in each of the four holds, another in the engine- room and the sixth in the paint and rope locker.

After bunkering and loading a cargo of coal at Cardiff it was back to Buenos Aires for grain. It was a melancholy passage for those of us who were sensitive to the massacre taking place below.

The Third Officer became insufferable recounting how he intended spending his reward. The Captain was even more self-satisfied and called for a daily count of rats seen on deck. The number decreased steadily from 50 on passing the Longship Light, to three on the day we picked up our pilot at the mouth of the River Plate. So overjoyed was our genial Captain that he promised a day's leave to every man in the forecastle and a slap-up dinner ashore to all his officers. The announcement was made in the officers' mess with unexpected results. The Chief Engineer, a cynic if ever there was one and still bemoaning the loss of his shoe put forward a counter proposal that the celebratory dinner should be held aboard and that we should dine on rabbit. The Captain's wrath was terrible to behold. "Rabbit, Mister? What the devil do you mean, rabbit? If this is some kind of joke I would remind you that I have no sense of humour, none whatever."

"I only mean that the Second Engineer, the Donkeyman and a couple of stokers have all reported seeing large brown and white rabbits in the stokehold. I know that the Donkeyman has been known to see pink elephants, but never at sea. The Second is a lifelong teetotaller and I have no reason to doubt the veracity of the stokers both of whom have sailed with me ever since I became Chief." There was only a moment of deathly silence before the truth dawned. The Third Officer's face went white, the Captain's Purple. The Second Officer collapsed in a fit of hysterical giggling and several others at the table appeared to be choking.

Yes, you have guessed it! The brown and white spectres were not rabbits, but hybrid rats, twice as large as their Siamese dads and three times the size of their British mums. Where there had been scores before there were hundreds now and this was only the beginning, but a good point to end my story.

ar

Marine Distress Call Procedure

Don Hopper VK4NN
Lloyds Road, Springbrook, Qld. 4213

The information Distress Calls *published in March issue of* Amateur Radio *is* **not** *Distress Call Procedure. It was produced essentially for the Inshore Boating Service and CB Service to assist in determining if an apparent distress call is genuine. Off-shore situations are usually quite different. VK4NN clarifies the issue and describes a number of real-life emergencies.*

I doubt whether there are any small craft, operating in Australian coastal waters which would have only amateur radio on board. Most speedboats, cabin cruisers and coastal yachts have a 27 MHz marine radio and a large number now also have VHF marine radio. The Australian Coastline near the centres of population is well covered by a radio network operated by the Volunteer Rescue Groups and there is little chance of a distress call on 27 MHz being missed by these stations.

It is my opinion that a small vessel equipped with 27 MHz marine radio and also having amateur radio on board would, should an emergency arise, call on 27 MHz emergency in preference to calling on an amateur radio frequency.

The appendix 3.1, Distress Call Interrogation form is **not** distress procedure. Part One note clearly states "If any answer indicates a *genuine* distress situation exists, immediately carry out standard procedures." The standard procedures mean International Distress Procedure.

I am not aware of the percentage of hoax calls received by the Inshore Volunteer Rescue Group but I do know the radio operators have quite a problem in assessing whether a distress call is genuine. The interrogation form assists them in establishing whether a call is genuine.

The same problem does not exist with distress calls sent by ocean going yachts on amateur radio bands. I know of only one amateur (a VK2) who makes a habit of transmitting hoax distress traffic. He is well known to Police and DOTC. When Sea Safety has me handle the amateur communications, I know his voice and his poor standard of Morse. Nevertheless, when he has claimed he has picked up a distress call it takes about four hours to be certain no distress situation exists.

The Distress Call Interrogation Form (March AR) is not an International Form and should not be confused with International Distress Procedure. For amateurs, the International Distress Procedure is clearly set out in 7.17 to 7.32 of the *Amateur Operators Handbook*.

However, I will set out the procedure and include aspects applicable to Australian requirements.

The Distress Message consists of:

"Mayday" or "SOS" in CW, repeated three times
The name of the vessel, or call sign repeated three times
Position of vessel
Nature of distress and kind of assistance required
Any other information which might facilitate the rescue

With most distress situations arising on amateur radio, panic is usually in evidence and the vessel in distress may not do any more than yell "Mayday". It is up to the amateur receiving the distress call to endeavour to obtain the information required to complete the distress message.

Common-sense is necessary by the receiving amateur. The vessel may be on fire and only a few seconds are available to send a distress call. The most important part of the distress message to obtain is the position of the vessel. On two occasions I have received panic calls, "Mayday, I am on fire abandoning ship". In such instances reply immediately to the call "What is your position, I cannot help unless you tell me". On the two occasions I mentioned, this did the trick and they gave a position before abandoning the vessel.

Immediately you have the distress message, or whatever part of it you were given, quickly check whether any other amateur also heard the traffic and, if so, ask them to monitor the frequency while you telephone *Sea Safety Canberra* — reverse charge to Canberra 47 5244 or STD (062) 47 5244.

Carry out the instructions Sea Safety give you. Sea Safety may ask you to listen for me, VK4NN, as their link on amateur radio for the Pacific Region, or for Art VK6ART, their link for the Indian Ocean.

It was never envisaged by authorities that yachts sailing across oceans would depend on amateur radio for safety of life at sea. No provision was made for our Search and Rescue organisation to have their safety network, via the OTC Coast Radio Service, available to handle distress traffic on amateur radio, Thus, as emergencies increased on amateur bands, VK4NN, a retired Marine Pilot and VK6ART, a recognised experienced operator, were employed by Sea Safety as their amateur links for communications in sea emergencies. Marine emergencies on amateur bands can develop into communication "nightmares". I hope this article may give more amateurs an awareness that once distress or emergency traffic is being handled by Sea Safety Canberra it is no longer amateur radio traffic and amateurs must not interfere with it.

Under International Regulations, the mobile station in distress, eg a cargo ship, is in control of distress traffic. On amateur bands, the vessel in distress is usually a yacht and, for practical reasons, I usually ask the vessel in distress to delegate control to me, VK4NN, under ITU Regulation 3136. However, Sea Safety Canberra is in overall control and I do no more than function as their communication medium. As Control Station, I may impose wireless silence and breaking this silence by amateurs is a breach under International Regulation 3146.

Distress is defined as being **Threatened by Grave and Imminent Danger** (Mayday). Urgency is defined as "Not being in serious and imminent danger but requires assistance, eg medical advice, disabled, etc, (Pan Pan). There is another unfortunate amateur radio signal, a double break, "Break-Break" which is accepted by maritime mobile nets as being some emergency. It leaves the station receiving the double break having to decide whether it is a distress or urgency situation, which is most unfair.

Following are some of the situations which have arisen recently on the amateur bands.

1. Yacht (a Chinese junk) on a voyage from Samarai to Cairns. Top of rudder post gave way, unable to repair. Disabled in rough seas. Did not know their position. Had sextant but no knowledge of how to do the calculations to establish their position.
   I had the crew take sun sights and I did the calculations in my chart room. Established yacht's position 75 miles off course and drifting on to Osprey Reef. Advised crew to set sails and idle engine so that they drifted clear of reef.
   Two and a half days to shepherd vessel safely into Lizard Island.

2. Yacht on voyage Port Moresby to Cairns. Bobstay snapped, bow-spirit cracked, bent vertical, mast unsupported.
   Rough seas, was endeavouring to make Cooktown with a beam sea. Advised them to put wind on starboard quarter and head for a reef opening off Lizard Island.
   Nearly went on reef when engine failed. Game fishing boat towed them to Lizard Island. Exercise took three days.

3. Voyage Brisbane to Honiara. Mast cracked in strong winds and rough seas. Established yacht's position by having crew take sun-sights which they passed to me for calculation. Heading for Mooloolaba in a beam sea, but insufficient fuel to reach port. Suggested they put wind on starboard quarter and head for Bundaberg. Reached port safely after three days.

4. Voyage Suva to Auckland. Skipper's first voyage. Had navigation computer, but did not operate it correctly. After 16 days had not reached Auckland. I had skipper take sights and pass them to me for calculation. I established he was to the west of New Zealand, 660 miles off course and only 540 miles from Sydney. Took eight days to get him back to Auckland!

5. Yacht at anchor on Sou'west side of New Britain. Skipper in severe pain, wife seven months pregnant. VK4 amateur, a doctor, diagnosed stones in kidney, suggested immediate hospitalisation. Nearest air strip 70 miles away, no roads. Helicopter picked up skipper and landed him at Lae Hospital, 150 miles away, six hours after initial call.

6. Single-handed voyage Noumea to Brisbane by elderly man. Steering failure 70 miles out of Noumea, unable to return. Man in poor shape after three days. Diverted him to Bundaberg to ease his passage. Had to maintain constant contact for seven days due to man's stressed condition. Serious interference by amateur accusing me of "commercial traffic".

7. Yacht on voyage Noumea to Brisbane. Skipper with bad bout of malaria, rest of crew inexperienced and on their first voyage. My Marine Rescue Station, VJ4DZ, used to organise Volunteer Rescue Group to assist vessel into Moreton Bay. A persistent amateur kept interfering claiming what I was doing was illegal and would not let me keep sched with the sick skipper. A poor show.

8. Single-handed yacht in Tongan waters. Skipper swam into a marine stinger. Was in intense pain. Medical advice quickly available from a specialist in marine stingers at Princess Alexandria Hospital in Brisbane.

My involvement with Sea Safety includes locating yachts reported missing by worried families. Happily most are located quickly.

Two yachts departed Mexico together, bound for Fatu Hiva, Marquesas. One yacht arrived okay and after waiting for three weeks, reported the other yacht missing. Information came to Sea Safety from Honolulu Rescue Co-ordination Centre. Six hours later I was able to tell Canberra to advise Rescue Centre Honolulu to look next door to the Centre where the yacht was located. The skipper had diverted 2150 miles to Honolulu and not told anyone!

Most distress call have been from yachts on a reef. Quite a number manage to free themselves and proceed to port. One distress call came from a yacht on a voyage from Honiara to Thursday Island which went on a reef north of Princess Charlotte Bay. The interesting aspect was the vessel had no dinghy or life-raft!

NOTE: "Sea Safety" is the recognised short form of "Federal Sea Safety and Surveillance Centre" which is part of the Department of Transport and Communications. —Ed. **ar**

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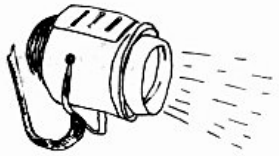


Spotlight on SWLing

Robin Harwood VK7RH
52 Connaught Crescent, West Launceston, Tas. 7250

I have just been reading a very interesting little book entitled *Assigned to Listen* by Vladimir Rubinstein and Olive Renier. It is an account of the early days of the famed BBC Monitoring Service from 1939 to 1943. This is through the eyes (and ears) of the monitors themselves.

It contains reminiscences of the early days when they were based at Wood Norton, near Evesham, Worchester. From early, hectic days, when demands were made upon them, with a lack of suitable translators and receivers that were primitive by todays standards.

The Service persevered and its expertise and information were quickly appreciated by various ministries and other subscribers. Up to the present day, the BBC Monitoring Service has maintained its standards and is still providing information gained from the monitoring and translation of various broadcasting outlets.

There were difficulties coping with static and poor modulation from transmitters, plus adjacent signals, although these problems were not nearly as bad as today's congestion on the shortwave spectrum. They achieved several coups and realised the importance of their work during the early days of World War II.

One translator was a little over-awed when Stalin, the wartime leader, suddenly came to the microphone. This was a few weeks after the German invasion of the Soviet Union in 1941. He had been silent until that point and troops were reeling under the "Blitzkrieg" onslaught. Stalin was nervous and could frequently be heard drinking from a glass. Stalin was, of course, Georgian, and his Russian was heavily accented, which presented difficulties to the translation added to the fact that the acoustics in the makeshift studios were not good which indicated they were probably from an underground bunker. Fortunately, the Soviet broadcasting organisation repeated the address from a studio announcer several times afterwards so that the text was able to be transcribed.

Naturally, the existence of the BBC Monitoring Service was top secret, yet the average person on the street knew that it was a secret wireless station, although they didn't know what transpired there. The effect on the small village of Evesham, with the many foreigners who worked there, is documented in the local paper, although there is no record of the activities of Wood Norton due to national security.

Eventually the decision was made that a new site had to be chosen and an Oratory School, near Reading, was selected. Reading, however, had the draw-back of not being very satisfactory for reception, so another site, three miles away at Crowley Park was chosen to be the receiving site. The Oratory School, at Caversham, was to be used for translation work, from signals fed down from Crowley Park. This came into being in 1943 and the BBC Monitoring Service is still utilising the same two sites today.

I do hazily recollect that satellite dishes were installed at Caversham to monitor the Soviet domestic satellites that feed television to Siberia and the Far East plus, presumably, the Atlantic Ocean satellites that relay television programs from North America and Europe. So, they have kept abreast and are continuing to monitor public broadcasts.

The BBC Monitoring Service certainly is up-to-date with identification of various broadcasting stations and future developments in broadcasting. Until recently many DX magazines had the "World Broadcasting Information" in their news columns, but the cost of this service has escalated beyond their slender means, although the "DX Partyline" on HCJB does broadcast this through the sponsorship of an American electronics firm. It should also be pointed out that the "World Broadcasting Information" is copyrighted.

Assigned to Listen is published by the BBC External Service and costs £3.95 (sterling). I received my copy from the BBC Shop, 35C Marylebone Street, London, W1, thanks to a VK7 who was visiting London for a conference. I am also aware that the BBC World Service also has their own shop C'- PO Box 76, London, England, WC2PB.

Well, Summer is just around the corner and the D87 broadcasting period commenced on Sunday, November 1. The previous period was hectic, to say the least, as one kept abreast of all the alterations stations made in September. These alterations are because of seasonal fluctuations and the need to avoid adjacent stations. Many experienced DXers regard the "S" period as "hopscotch-time", which is a fair analogy.

This month also sees the direct broadcast of two events. The first is on Saturday, November 7, at 0700 UTC. It is from Red Square, in Moscow, and is to celebrate the "Great October Revolution". This year is apparently the 60th anniversary of this event and every year there is a large military parade on that date. Many are probably wondering why celebrate a revolution in October during November! The answer is simple — Russia was on the Julian calendar at the time of the Revolution and the Julian calendar is 10 days behind the Gregorian calendar in the rest of the world. The new Soviet regime quickly brought the calendar forward to the Gregorian calendar. This makes me feel sad for all those who missed their birthdays as I do remember, in history class at school, that there were riots in England from people who missed their birthdays in the 18th Century when they "caught-up" with the Gregorian calendar.

The second event to be broadcast has more relevance to us in Australia and is from Whitehall, in London. It is the Remembrance Service from the Cenotaph, in the presence of Her Majesty the Queen. It is on from 1030 to 1120 UTC, in the usual BBC W/S outlets on either November 8 or 16. This has been broadcast on shortwave for over 50 years.

Well, until December, the very best of DX and 73 from VK7RH.

ar

TORNADO HITS EDMONTON

Refrigerator found 30 km away!

Sam Voron VK2BVS
2 Griffith Avenue, Roseville, NSW. 2069

It was Saturday, August 1, 1987, at 0730 UTC — that is one of the three times a day when radio contact is made between the third party traffic networks of Australia and North America. Sam VK2BVS, in Sydney, called into the *Australian Traffic Network* to North America, on 7.228 MHz, as he normally does each afternoon. K7QQP, controller of the USA net and Military Affiliated Radio System (MARS), asked Sam if he had any messages for the Canadian disaster area, because VE6UX, from the Canadian emergency network was on frequency.

Sam inquired if there was something wrong and was told that parts of Edmonton had been devastated by a tornado which had hit without warning during the peak hour rush at 5 pm on Friday, a Canadian long weekend.

Amateur radio was providing health and welfare communications for the general public. Telephone lines into Edmonton were congested and virtually non-existent but the internal telephone system was usable. "A state of emergency has been declared" announced VE6UX.

There were 26 dead, 250 injured and a damage bill estimated at over 250 million dollars.

A telephone call to OTC Australia confirmed telephone communications with Edmonton had been unavailable since 0100 UTC, so the Australian Traffic Network swung into action using experience gained from similar past emergencies. This experience allowed Australian amateurs to quickly respond by linking friends and relatives who were unable to communicate by normal means during such a time of distress.

The Canadian Consulate, in Sydney, referred callers to radio amateurs who had volunteered to accept messages from the public. The ABC National News Broadcast announced the telephone numbers of amateurs who could assist them. These included VK7RH, VK3CKK, VK5IQ, VK4NBK, VK6RQ.

Sydney CB operators, involved in the annual simulated emergency radio communications test, organised by the ATN over past years, were able to participate in a real emergency service for the first time, by accepting and delivering all Sydney messages.

This was extremely successful considering the tornado happened on a Saturday, normally the most hectic time on CB radio. Channel 14 AM, 27.125 MHz, was kept clear for the 27-hour duration of the emergency by CB operators acting as net controllers. One such operator was Ian NGD627, who had gained experience from such simulated emergency radio communication tests and was, therefore, familiar with how to assist and how to conduct such a network.

Sam VK2BVS, using his CB radio and call sign, NDG427, collected messages originated in Sydney and destined for Canada. He then passed these on to Mathew NEU232 for delivery. Messages for other parts of Australia were passed on the Australian Traffic Network frequencies — 3.570 MHz at night and 7.060 by day.

Much interest in gaining amateur radio licences have been generated in Sydney as a result of such amateur radio related activities on the CB band. Sydney is a city of four-million people and daily activity currently being focused on Channel 14 AM is increasing the interest amongst CB operators in learning and participating in public service amateur radio related activities. This increases the pool of operators able to assist in future events which may effect a large city like Sydney.

Meanwhile, in Canada, all television and radio stations were telling the country how Canadian amateurs were handling thousands of national and international health and welfare messages for the city of 700 000 people.

Congratulation to all radio amateurs for the quick response they provided to their community. It is pleasing to include Canada with the help we, in Australia, have been able to similarly provide in linking concerned relatives to the disaster areas of Mexico 1985, El Salvador 1986, and Vanuatu 1987.

ar

Electro-Magnetic Compatibility Report

Hans Ruckert VK2AOU
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

Experience shows that there is often more involved than adding a filter to solve a TVA or RFI problem. Disappointment will only be avoided if all requirements are met and understood. If one wishes to build their own filter, they can use the mathematics published in radio amateur handbooks (see also AR, July 1982, page 17). Testing the attenuation versus frequency one will often discover that, at frequencies above 30 MHz, the attenuation leaves very much to be desired. Simple theory does not consider that the capacitors used do not only have losses but they have leads, which represent inductance and cause self-resonances. Similarly, the coils have losses and capacitance. If the various filter sections are not shielded with soldered in partitions, or the lid has gaps (insufficient solder or too few screws), more breaks in the attenuation versus frequency curve are likely.

The filter effect is also reduced, if the filter is not directly connected to the equipment shield, but via a length of coaxial cable with insufficiently RF-tight shield braid.

Figure 1 shows the coupling resistance of different coaxial cables in milli-ohm per metre as a measure of the shielding efficiency. Curve one is for single braid, two for double braid and the third for metal tube shield. That is why professional test equipment uses metal tubing instead of coaxial cable. The safety capacitors of 470 pF at the television antenna terminals, which separate the braid of the television coaxial antenna cable from the television chassis, are also helping the harmonics of the 15.625 kHz line frequency oscillator to reach the antenna thus causing RFI to broadcast receivers from long waves to short waves within the house and neighbourhood. A separation transformer may help in many cases (AR, March 1987, Figure 4 and 5). These safety capacitors were removed during TVA tests on a "Blaupunkt" television and the immunity improved by 15 dB at VHF and by 20 dB at UHF, the manufacturer reported. Their 23 ohm reactance at 14 MHz reduced the effective earthing of coaxial braid at the television chassis. The earthing of a highpass filter case would be similarly affected.

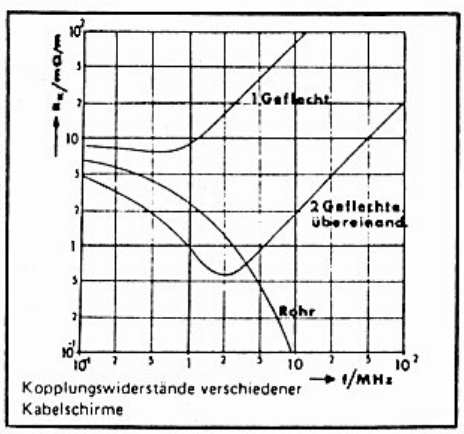


Figure 1: RF Coupling Resistance in mohm/m of Coaxial Cables with one layer and two layers of Braid and Metal Tubing Shield.

It is understandable that the industry attempts to use as little filter effort as possible, if such a filter does the job. Figure 2 shows a highpass filter made by Philips. All components are placed on a small PCB of about the size of a postage stamp. 20 dB attenuation at 14 MHz may be enough in some cases, if the filter is soldered to the tuner shield.

Examples. The following drawings are from the book *Elektromagnetische Vertraglichkeit* published by "Expert Verlag" author Dipl Ing D Jaeger. (The book was a present from DL1BU, who visited VK recently). The lessons we can learn from these drawings apply not only to the shielding and connecting of filters to transceivers and transmitters, but also to the interconnecting and earthing of the different parts of an amateur station. Such parts might be: transmitter, receiver, amplifier, processor, match-box, preamplifier, power supply, and monitor with computer, and filters.

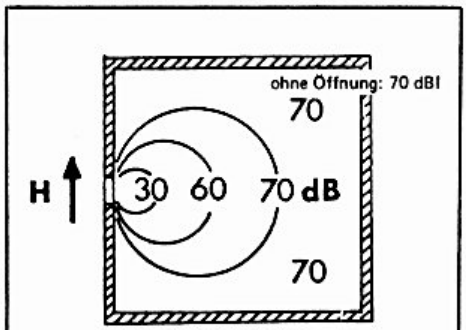


Bild 6.20: Verringerung der Schirmdämpfung durch eine Öffnung

Figure 3: Reduction of the Shielding Attenuation by an opening in the side wall.

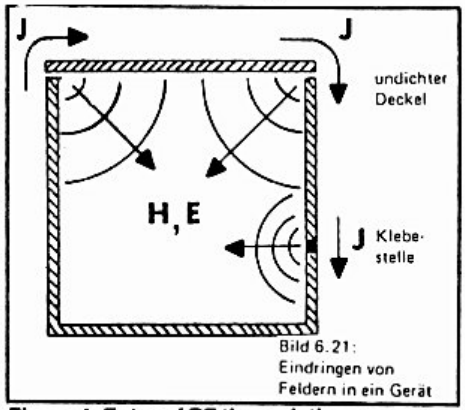


Bild 6.21: Eindringen von Feldern in ein Gerät

Figure 4: Entry of RF through the inadequately closed lid, and via a hole at one side with an insulated but not shielded wire.

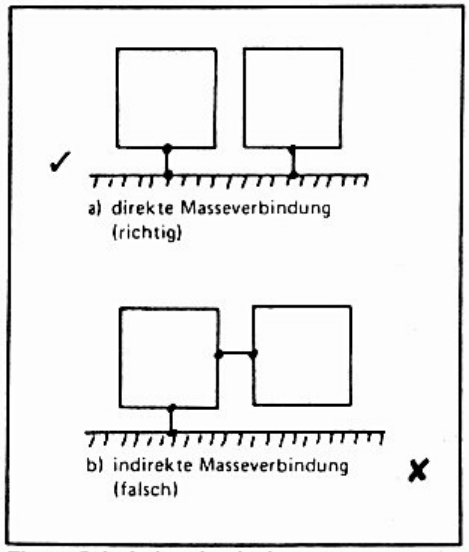


Figure 5: Left drawing is the correct way, and the drawing at right shows the wrong way of earthing several pieces of equipment which are interconnected.

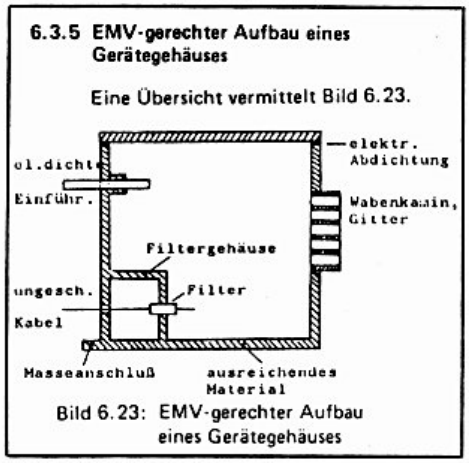


Bild 6.23: EMV-gerechter Aufbau eines Gerätegehäuses

Figure 6: EMC-correct construction of an equipment housing. The lid is closed RF-tight (with weather stripping). The filter is installed at the wall of a separate shielding box. The ventilation holes at the right side have depth, not just holes in sheet metal.

Figure 2: Highpass Filter on Printed Circuit Board.

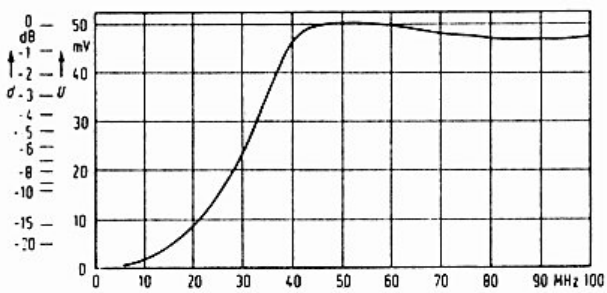


Bild 3. Durchlaßkurve des Philips-Hochpasses

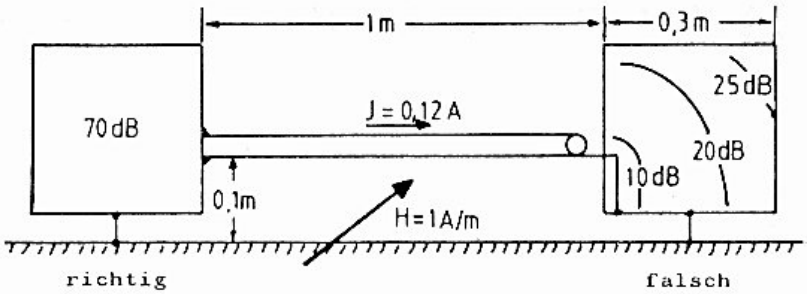


Figure 7: The interconnecting cable is not contacting the outside wall of the equipment at the right, in order to earth the cable braid before entering the other equipment on the right side.

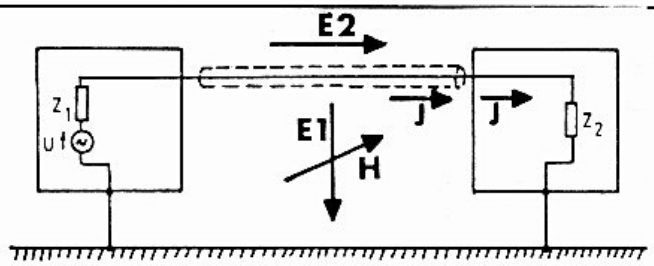


Figure 8(a): The braid of the interconnecting coaxial cable between the two units is not in contact with the equipment chassis outer wall.

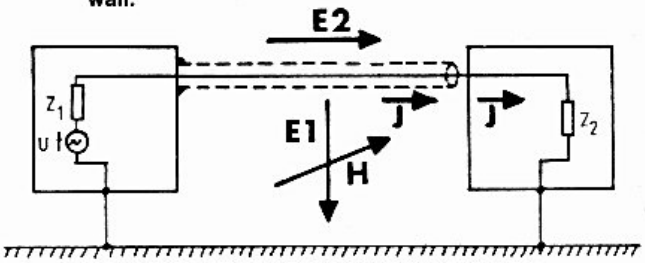


Figure 8(b): The braid is only in contact with the equipment at the left. (A VCR RFI case was recently solved, when it was found that an internal piece of coaxial cable braid had only been soldered to the chassis at one end).

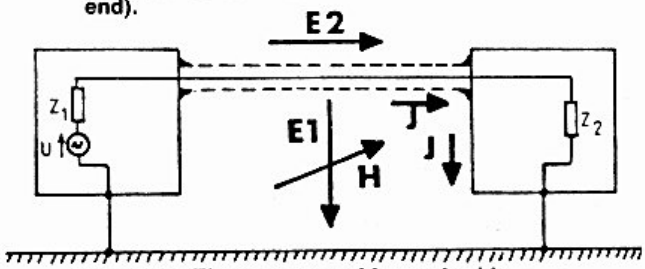


Figure 8(c): The correct earthing and cable connecting method.

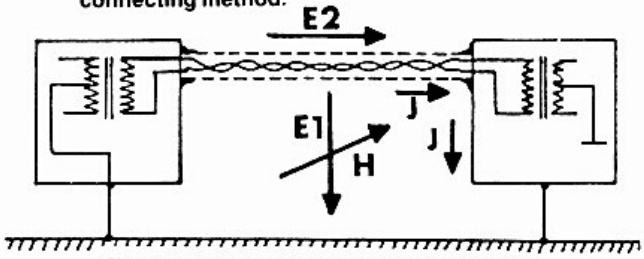


Figure 8(d): Double shielding and earthing plus decoupling with transformers is the best method for interconnecting separate apparatus and avoiding unwanted radiation.

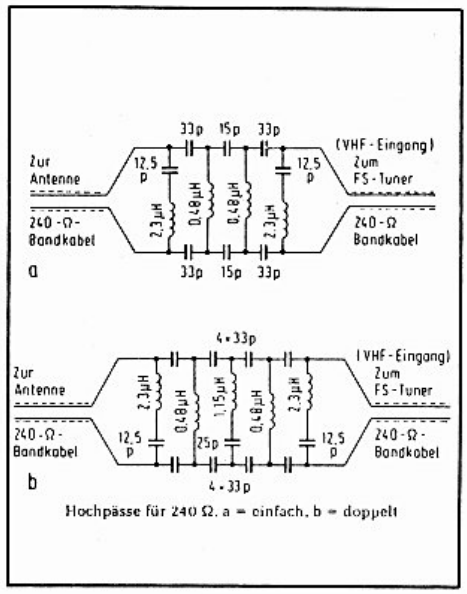
Table 1 shows just a few products provided by appliance manufacturers to improve the EMC (reduce susceptibility) of television receivers, because the German law requires performance standards.

Table 2 lists highpass and lowpass filters offered by special filter manufacturers.

All filters listed in Table 2 have male and female coaxial plugs directly installed to the filter shield to avoid cables between the filter and amplifier (television set, etc). There are also special filters to suppress radio telephone transmitter signals and/or the signals from CB and 145 MHz transmitters. There are many other television manufacturers who have filters available, like Grundig, Nord-Mende, Saba, etc. The appliances are so designed that space and connections for filters are provided where they are most effective.

Figure 9 shows two typical highpass filters with twin-lead 240 ohm termination. Two highpass filter circuits were described in AR, July 1982, suitable for 50-70 ohm termination and cable.

The accompanying photographs and attenuation versus frequency graphs clearly illustrate the design and characteristics of several commercially available and homemade filters.



Hochpässe für 240 Ω. a = einfach, b = doppelt

Figure 10.

Figure 10 shows, at the top a split-filter from Haro-Elektronik (DJ2NN), which includes a lowpass filter and a highpass filter with 50 ohm load, diode and harmonic energy power measuring facility. A milliwatt meter is supplied separately (see Figure 11). The split filter feature does not reduce the harmonic radiation from the amplifier (contrary to popular belief), but demonstrates how much harmonic power is generated under various preamplifier operating conditions. One problem is that, often the highpass filter does not have sufficient attenuation of the fundamental transmitter power. The indicated unwanted power output thus often contains some fundamental power as well. This is especially so, if the amplifier operates at 28-29.7 MHz. This can be checked by placing an additional good lowpass filter between the amplifier and the split filter. What is now indicated is only fundamental power leakage, which the lowpass part of the split filter should suppress.

Figure 10 shows, in the middle, a very good lowpass filter from the "Auth" company, type TP-30. The case is of welded construction, as it should be. The lowpass filter at the bottom of Figure 10 is the extremely effective LF-30-A from Kenwood. All of these three filters start to attenuate above 30-35 MHz.

The filters in Figure 12 show (from top to bottom), Schertler (DJ0AV loudspeaker filter on a toroid ferrite ring for the range 0.5 to 500 MHz,

Tabelle 2. Sperrfilter, Hoch- und Tiefpässe für Antennenverstärker und Empfänger — Table 2

Typ	Durchlaß-bereich	Durchgangs-dämpfung	Sperrbereich	Sperrdämpfung	Ein- u. Ausgangsimpe-danz, Klemm-anschluß
Auth. TP 1600*	0,1...1,6 MHz	< 1,5 dB	3...700 MHz	> 60 dB	60–75 Ω
Auth. BSF 27*	0,1...22 MHz 37...750 MHz	< 1 dB < 2 dB	27...30 MHz	40 dB	60–75 Ω
Auth. HF 40*	40...870 MHz	< 1,5 dB	0,1...30 MHz	> 50 dB < 30 MHz > 80 dB < 20 MHz	60–75 Ω
Hirschmann Sperr. 62S11	0,15...68 MHz 90...790 MHz	< 1 dB 2 dB bei 90 MHz	87...87,5 MHz	40 dB bei 87,33 MHz	60–75 Ω
Hirschmann Sperr. 62S10	0,15...26 MHz 87,5...104 MHz	< 1 dB 1,5 dB bei 89 MHz	87...87,5 MHz	38 dB bei 87,33 MHz	60–75 Ω
Schertler	85...800 MHz	1 dB bei 90 MHz 0,5 dB bei 200 MHz 5 dB bei 800 MHz	0,1...30 MHz	> 60 dB	240/60 Ω umschaltbar Lotanschlüsse
Auth. SF 145*	0,1...127 MHz 165...870 MHz	< 1 dB < 2 dB	144...146 MHz	50 dB	60–75 Ω
Auth. HP 174*	174...870 MHz	1 dB	0,1...150 MHz	> 50 dB < 130 MHz > 80 dB < 30 MHz	60–75 Ω
Auth. SF 435*	0,1...355 MHz 495...870 MHz	< 1 dB < 2 dB	430...440 MHz	50 dB	60–75 Ω

* Metallgehäuse 22 mm x 64 mm x 103 mm ** Leiterplatte 35 mm x 40 mm.

Table 2.
NOTE:
Passband in MHZ — Durchlassbereich
Insertion loss — Durchlassdampfung
Attenuation range in MHz — Sperrbereich
Attenuation in dB — Sperrdampfung
Input-output impedance — Ein-Ausgangsimpedanz

Hf-Trenntransformatoren — Table 1

Ein- und Ausgang	Fabrikat	Bestell-Nr.	Anschlüsse
75 Ω	Graetz		+ Koaxbuchse und -Stecker
75 Ω	Nordmende	525-523	+ Koaxbuchse und -Stecker
240 Ω	Nordmende	525-522	240-Ω-Bandkabel
75 Ω	Philips	Hf Tr 7104	+ Koaxbuchse und -Stecker
75 Ω	Schaub-Lorenz		+ Koaxbuchse und -Stecker
75 Ω	Telefunken		+ Koaxbuchse und -Stecker
240 Ω	Telefunken		240-Ω-Bandkabel
			+ nach DIN 45325 IEC-Norm

Hf-Hochpässe

Ein- und Ausgang	Grenzfrequenz	Fabrikat	Bestell-Nr.	Anschlüsse
75 Ω	40 MHz	Blaupunkt	8 627 000	Koaxbuchse und Stecker
o 75 Ω	40 MHz	Blaupunkt		+ Koaxbuchse und Stecker
240 Ω	40 MHz	Blaupunkt	HP 3	Buchse und Stecker mit 12 mm Stiftabstand
240 Ω	450 MHz	Blaupunkt	HP 4	dto.
75 Ω	40 MHz	Philips	HP 7104	+ Koaxbuchse und -Stecker
240 Ω	27 MHz	Philips	4812154-97002	zum Einbau
75 Ω	47 MHz	Telefunken	309259921 O	zum Einbau
240 Ω	47 MHz	Telefunken	309259922 P	zum Einbau
75 Ω	170 MHz	Telefunken		zum Einbau
240 Ω	170 MHz	Telefunken		zum Einbau

+ Durchgangsdämpfung 0,5...1 dB, Sperrdämpfung 40...60 dB
o mit eingebautem abstimmbaren Sperrkreis für das 2-m-Amateurband

Bandsperren

Ein- und Ausgang	Sperrbereich	Fabrikat	Bestell-Nr.	Anschlüsse
75 Ω	144...146 MHz	Graetz und Schaub-Lorenz		+ Koaxbuchse und -Stecker
75 Ω	70...170 MHz	Telefunken	309259923 O	zum Einbau
240 Ω	70...170 MHz	Telefunken	309259924 P	zum Einbau

Hf-Drosseln

Verwendungszweck	Fabrikat	Bestell-Nr.	Anschlüsse	Bemerkungen
Netzverdrosselung	Nordmende	411.035	Einbau	für FS-Ger.
Netzverdrosselung	Vogt	DR 2739-05	Einbau	2polig
Nf-Verstärkereingänge	Valvo	431202036640	Einbau	8 µH
Nf-Verstärkereingänge und im Nf-Verstärker	Jahre	7405-1500	Einbau	Miniatur-ausf. 150 µH
Nf-Verstärkereingänge	Nordmende	423.504	Einbau	60 µH
Nf-Verstärker	Sony	1-407-050-11	Einbau	
Lautsprecher-Hf-Drossel	Nordmende	424.495	Einbau	≦ 5 W
Lautsprecher-Hf-Drossel	Vogt	DR 2739-05	Einbau	> 50 W
Entstöradapter für Plattenspieler	Elac			2polig
Entstöradapter für Tonbandgerät	Elac			
Lautsprecher-Entstör-Telefunkenadapter				
Lautsprecher-Entstöradapter Zehnder, Tennenbronn				

Table 1.
NOTE:
Input and output impedance — Ein und Ausgang
Make — Fabrikat
Attachment Method — Anschlusse
Plugs — Stecker
RF Separation Transformers — HF-Trenntransformatren
Highpass Filter — HF-Hochpasse
Bandpass Filter — Bandsperren
RF Chokes, main chokes, AF amplifiers, loudspeaker, record player, tape recorder — HF-Drosseln

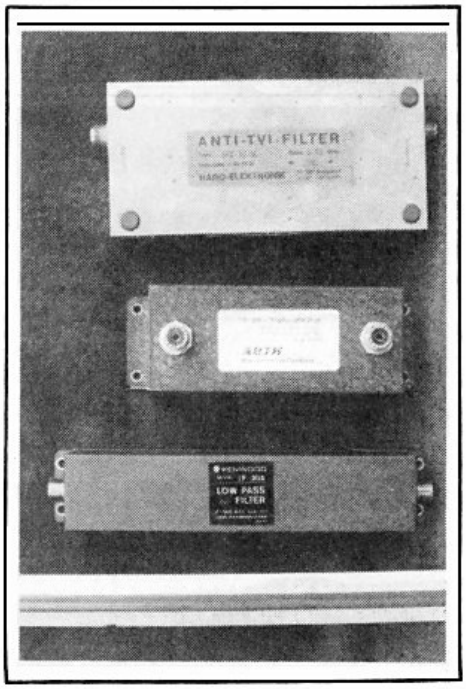


Figure 10.
offering over 40 dB attenuation, 250 watts AF at 8 ohms. Next is a VHF filter by Schertler with a stop-range of 0 to 150 MHz having over 30 dB attenuation, whilst the pass-range is 170 to 850 MHz with less than 0.5 dB insertion loss. The next filter shown is also from Schertler, the HPY-45 highpass filter. Stop-range 0-30 MHz with over 30 dB of attenuation and a pass-range of 45-850 MHz, with less than 1 dB insertion loss. THe last

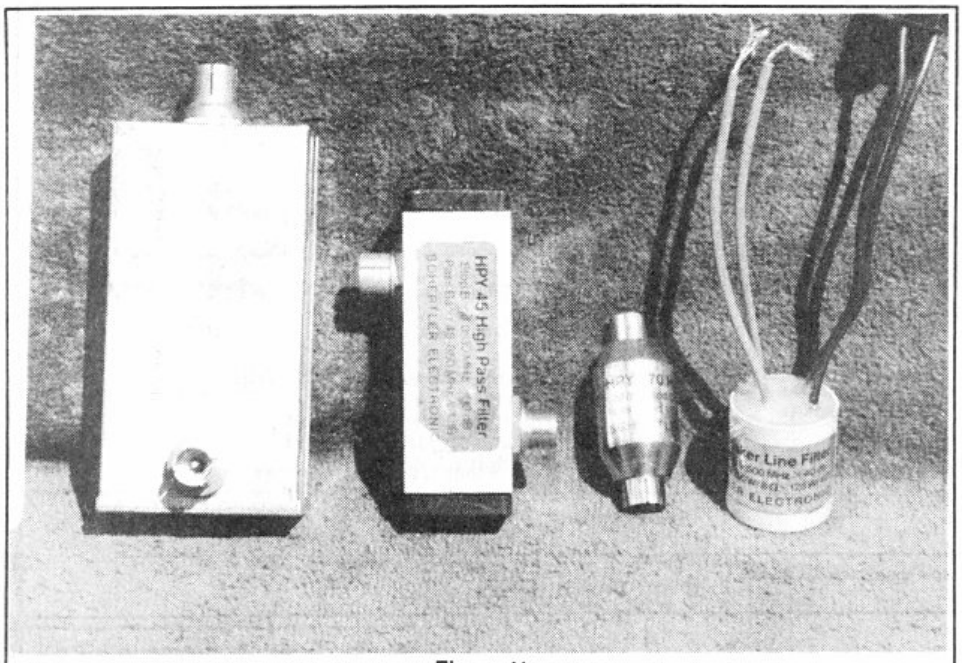


Figure 11.

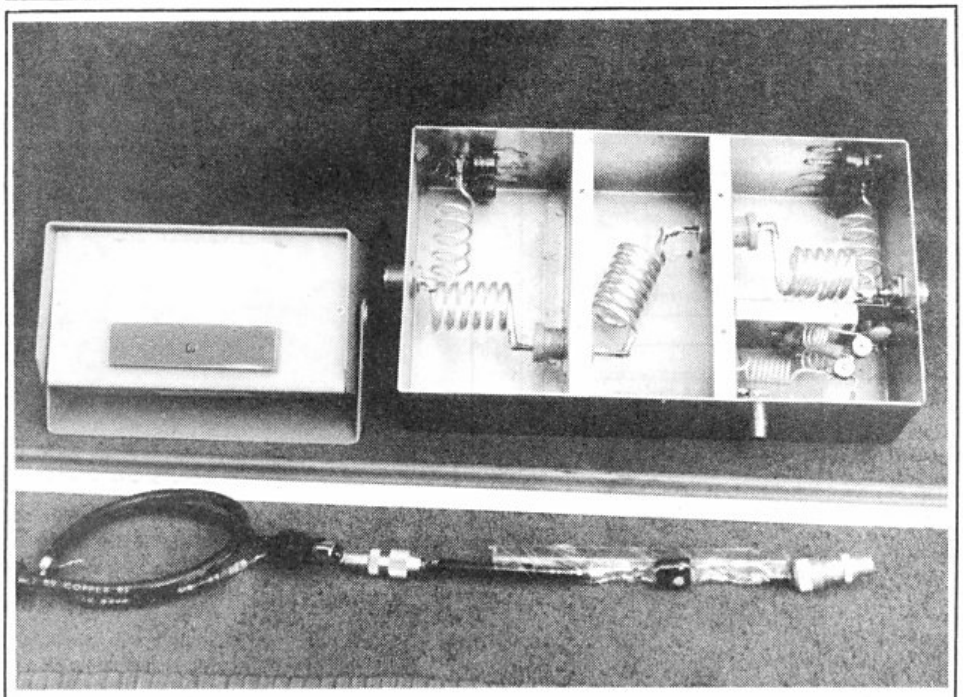


Figure 12.

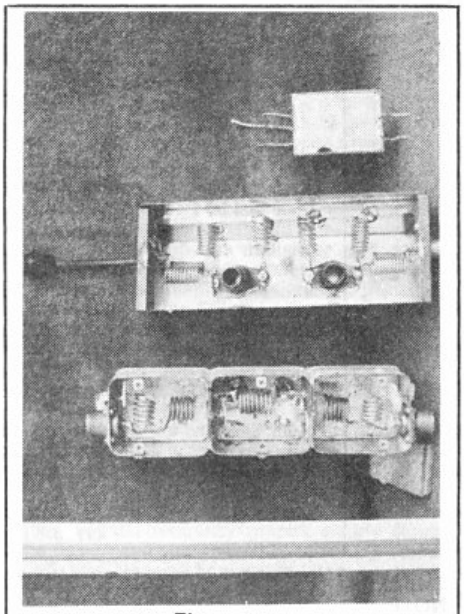


Figure 13.

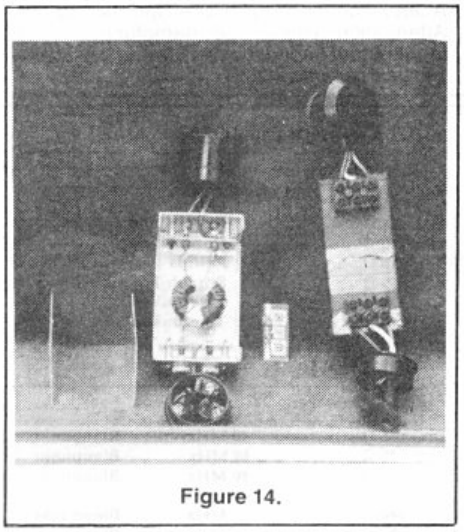


Figure 14.

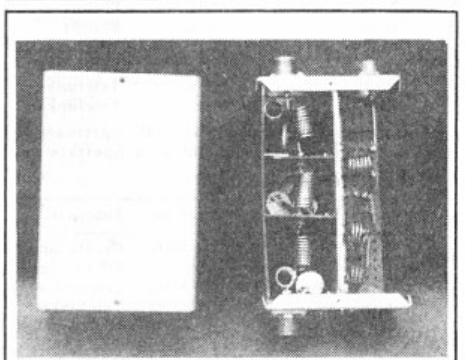


Figure 15.

filter shown in Figure 12 is a Telefunken highpass filter with six coils and nine disc capacitors. The attenuation exceeds 35 dB below 47 MHz and the insertion loss is less than 1.5 dB. The ruler at the bottom of the photograph reads centimetre dimensions. Tests showed that the attenuation of these filters was better than claimed by the manufacturer, a rare case!

Figure 11 shows the circuit and component values of the lowpass section of this large split-filter, type SP-30/5000-DC, are the same as those used for the lowpass filters the writer built (AR, July 1982, page 17), but the larger coils (six millimetres copper, silver-plated) and the ceramic capacitors make the filter suitable for powers of up to five kilowatts RF. To reduce or avoid the unwanted inductive reactances of the capacitors, two coaxial capacitors are used in the centre of the filter, and in the other cases, several capacitors are in parallel and soldered as closely as possible to the wall of the case. The welded steel case is copper and zinc plated. The highpass filter with the 50 ohm load resistor and rectifier diode can be seen in a corner of the case. The instrument to the left of the filter is calibrated in milliwatts (up to 500 mW). Running 400 watts two-tone PEP output, the meter should not show more than two milliwatts true harmonic power, operating at 29 MHz. The second harmonic may have to be suppressed with an open quarter-wave coaxial stub. Figure 11 shows, below the centimetre ruler, two separation transformers, which should be placed between the television coaxial feeder and the television antenna terminal, to keep unwanted RF from the television tuner, which may be picked up by the braid of the television feeder. At the same time, this transformer reduces the radiation of the television line-frequency-oscillator via the television antenna and feeder (see also EMC-Report, AR, March 1987, page 49). One transformer is made of two coaxial cable loops, whilst the other one uses a twin-hole ferrite core and two-three turns each of thin insulated wire. The split-filter (Figure 11), is also from HARO (DJ2NN). It has gold- plated terminals with teflon insulation. The harmonic power watt meter becomes more useful if the meter is a 50 uA type having a range of -10 to +17 dBm or about 50 mW.

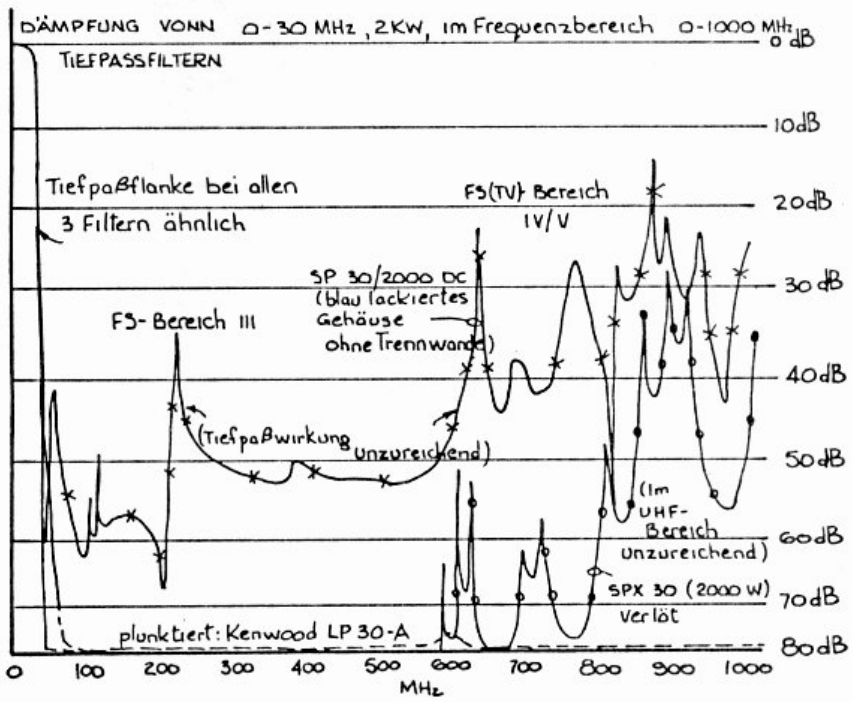


Figure 18 (a).

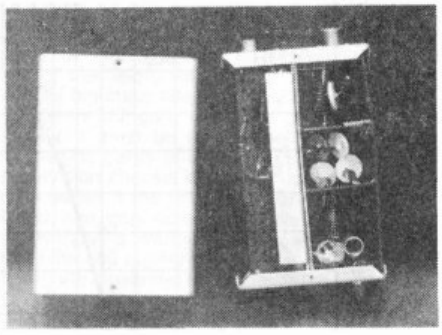


Figure 16.

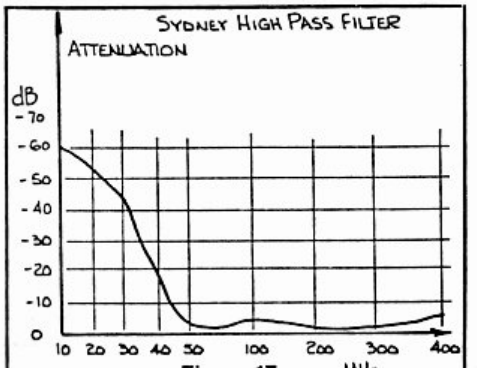


Figure 17.

Figure 13 shows three homemade filters. At the top is a highpass filter for twin lead termination of 280 ohms. It consists of four 20 pF capacitors and three coils one-eighth inch in diameter. All coils are earthed at the centre. The coil in the centre has 40 turns, the other coils, which are connected to the wires (terminals), and have 22 turns (*ARRL Handbook* literature). The larger filter in the middle of Figure 13 ia a highpass filter which was described in AR, July 19082, page 16. To increase decoupling between the coils of the various filter sections, the coils were placed at right angles, The filter at the bottom of Figure 13 is the well-known lowpass filter already mentioned earlier (*ARRL Handbook* literature, also used by HARO DJ2NN). The special ceramic disc capacitors have flat terminals (no wire leads). By using three separate cases, the shielding was good.

The two large filters in Figure 14 are mains-line filters. The filter on the left uses a ferrite ring core and two coils wound in opposing sense to avoid core saturation. The coil leads go to tubular feed-through capacitors of 2000 pF, which have been soldered to pieces of PCB. The other mains line filter has two long coils (no ferrite core) and feed-through disc capacitors of 5000 pF are soldered to the ends of the case. The effectiveness of these mains line filters depend very much on effective earthing to the appliance chassis (if there is one?). A wide copper broad strap was used to obtain the earthing connection. The open filter (between the line filters) carries three spiral coils on PCB and two 39 pF disc capacitors. This filter is identical to the shielded type HPY-45 shown in Figure 12. It may be directly soldered to the television tuner, if its attenuation of signals below 30 MHz is adequate.

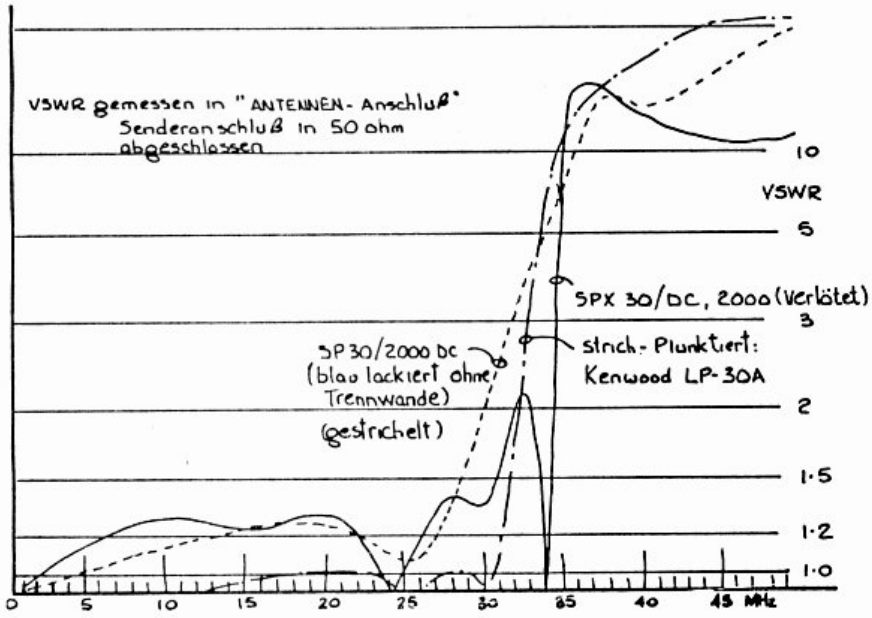


Figure 18 (b).

Figures 15 and 16 show an experimental filter. Test indicated that more and more partitions had to be soldered in to maintain sufficient attenuation at over 50 MHz. The outer extruded case did not help, having insufficient contact with the internal PCB shield.

MEASURING FILTER ATTENUATION VERSUS FREQUENCY

With the exception of Figure 8 (a and b), the filters were tested in the following way:

HP Signal Generator, model HP-608d 10-420 MHz, Output Indicator with 50 ohm load, Schottky Diode with 20 uA bias, Amplifier IC-741, 1 kHz Tuned Circuit to reduce noise and to pass the 1 kHz 80 percent signal generator modulation signal, Millivolt Meter, Philips GM-6012.

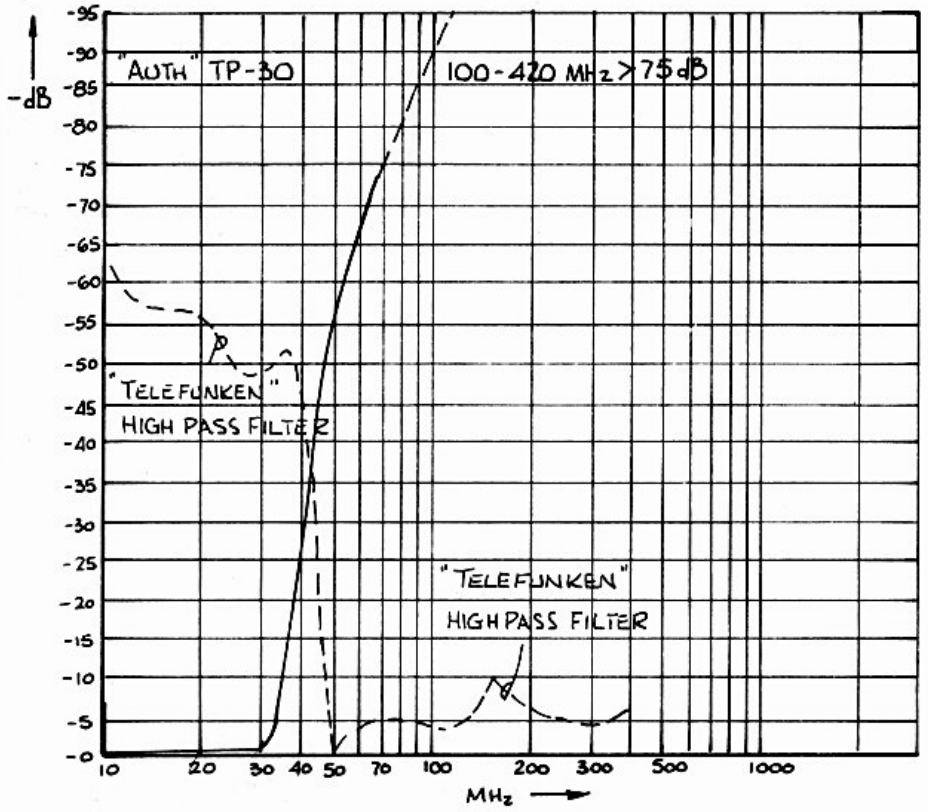


Figure 19.

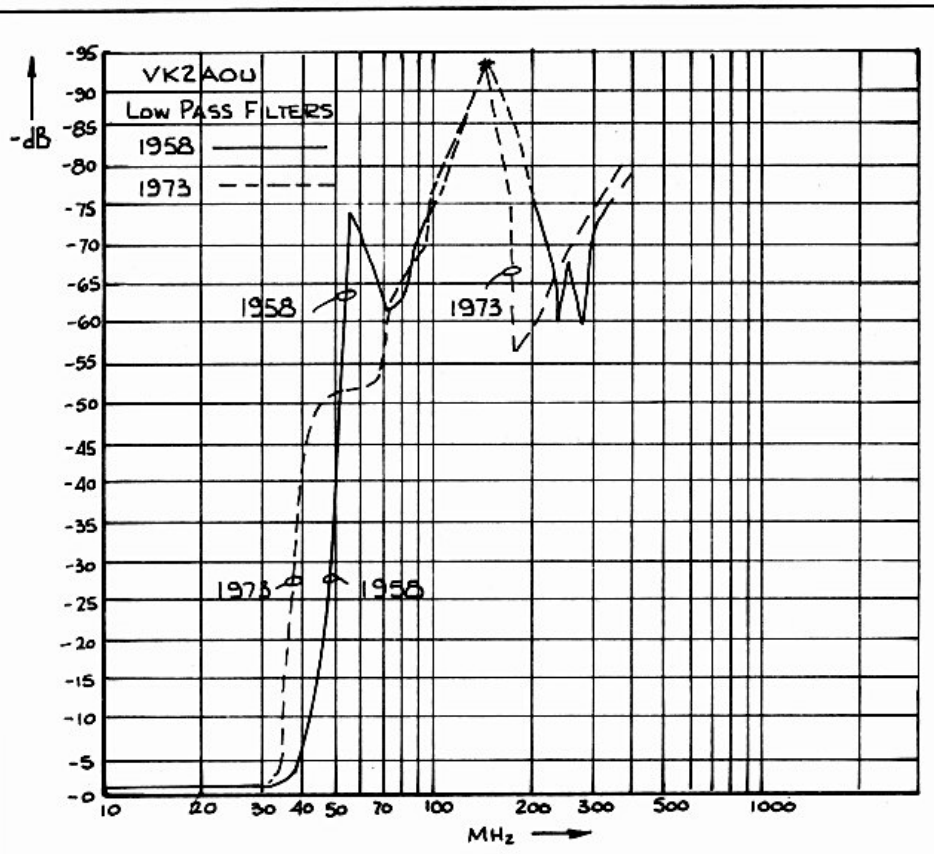


Figure 20.

All this equipment was standing on a large sheet of aluminium and directly earthed to this base. Equipment with feet of insulation material was earthed via a wide short foil strap. The signal generator attenuator was always do adjusted that the same two millivolts VTVM reading was obtained, operating the Schottky diode at the same potential. A correction curve was measured to take care of any frequency dependency of the millivolts indicating equipment.

This set-up gives an attenuation test range of 70 dB, which covers most needs. A spot test was made at 146 MHz by using a VHF receiver at the output of the filters.

In Figure 17, the locally made highpass filter has the L and C components mounted to a strip of sheet metal, and metal end-caps are used, but only a cardboard dust-cover is provided. This filter may help, if the problem is not too great, and if the filter can be effectively earthed at the television antenna terminal. The insertion loss at higher frequencies (UHF) seems to be high, and this could affect the television picture quality of Channel 28 reception.

Figure 18 (a) shows measurements which were made by DL1BU with professional equipment (x-y-recorder, etc). Three recordings are shown. The dotted line shows the excellent performance of the Kenwood LP30-A lowpass filter, which has only a very minor bump at 600 MHz. The attenuation is otherwise better than 80 dB from 100 to over 1000 MHz. The curve with crosses was measured on an earlier HARO filter, which did not have separating partitions, and the painted case was not welded or soldered at the joints.

This type of filter is quite useless (type SP30/2000). An improved version, type SPX30(2000W), with correctly soldered joints was very good up to 580 MHz (curve with small circles), but at higher frequencies (where more and more services are, or will, be operating, eg mobile phones at about 800 MHz), the attenuation was very poor.

The three curves in Figure 18 (a) are from the same filters, but show how the SWR is affected by insertion of these lowpass filters. The Kenwood filter gives the cleanest curve again. The soldered HARO filter exhibits an SWR increase, not matching the 50 ohm termination resistance.

Figure 19 shows the "AUTH" lowpass filter has the same clean and very good response as stated by the manufacturer. The attenuation is over 75 dB from 100 to 420 MHz (most likely higher). The Telefunken highpass filter has far more than the claimed 35 dB attenuation below 35 MHz, and about twice as much attenuation at this frequency as the locally made filter. The Telefunken filter has no partitions but an effective shielding case, and the adjacent coils are so placed that they are more or less decoupled. There is some attenuation at higher frequencies.

The curves in Figure 20 are the response curves of two homemade lowpass filters similar to the one shown at the bottom of Figure 13. The 146 MHz spot-test was done with a VHF receiver as detector for the filter output. The reduction of the attenuation in the 180-280 MHz range may be due to capacitor self-responses. One filter was made in 1958 and the other one in 1973 using slightly different L and C values. Both filters are satisfactory, but not as good at VHF and UHF frequencies as the AUTH and Kenwood filters, which later became available.

In Figure 21, the solid line represents the response curve of the HARO split-filter SP-30/5000-DC (for five kilowatts of RF power). It has, at VHF, similar "dips" at about 65 and 220 MHz as the filters just described in Figure 20, which uses the same circuit. The attenuation is again about 25 dB at 145 MHz. The dotted line shows the response curve of the small and simple Schertler highpass filter, similar to the locally made filter which has twice as many components (see Figure 17).

In Figure 22, the solid line of the HARO "Super-Split-Filter" SPX-30-DC has an ideal characteristic

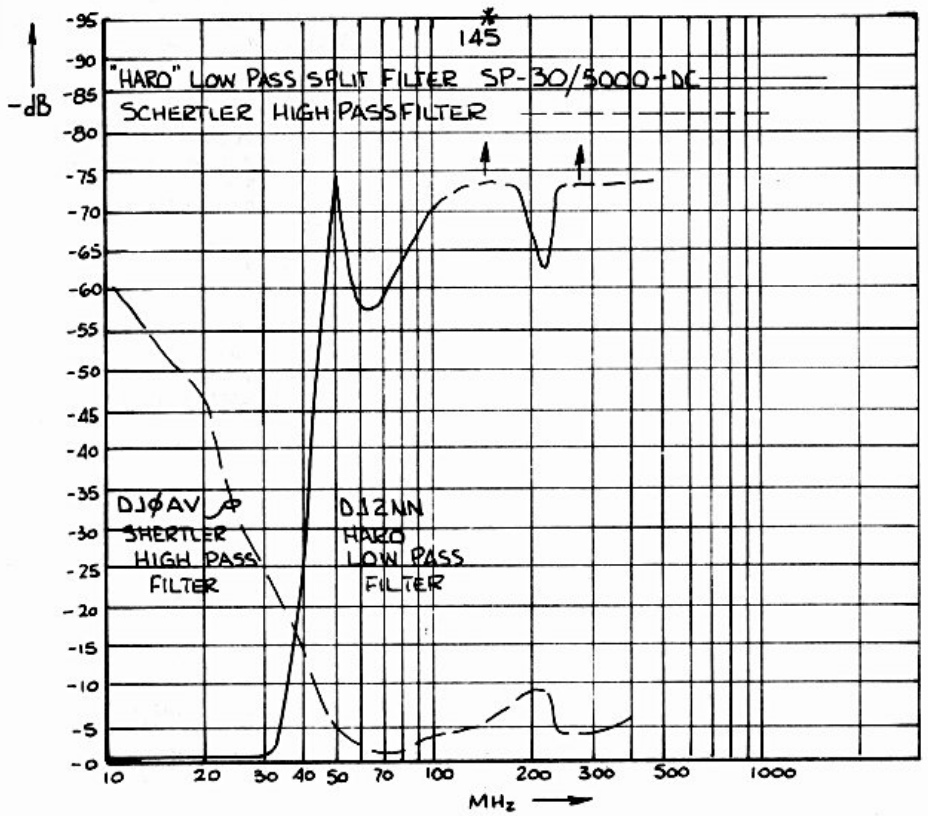


Figure 21.

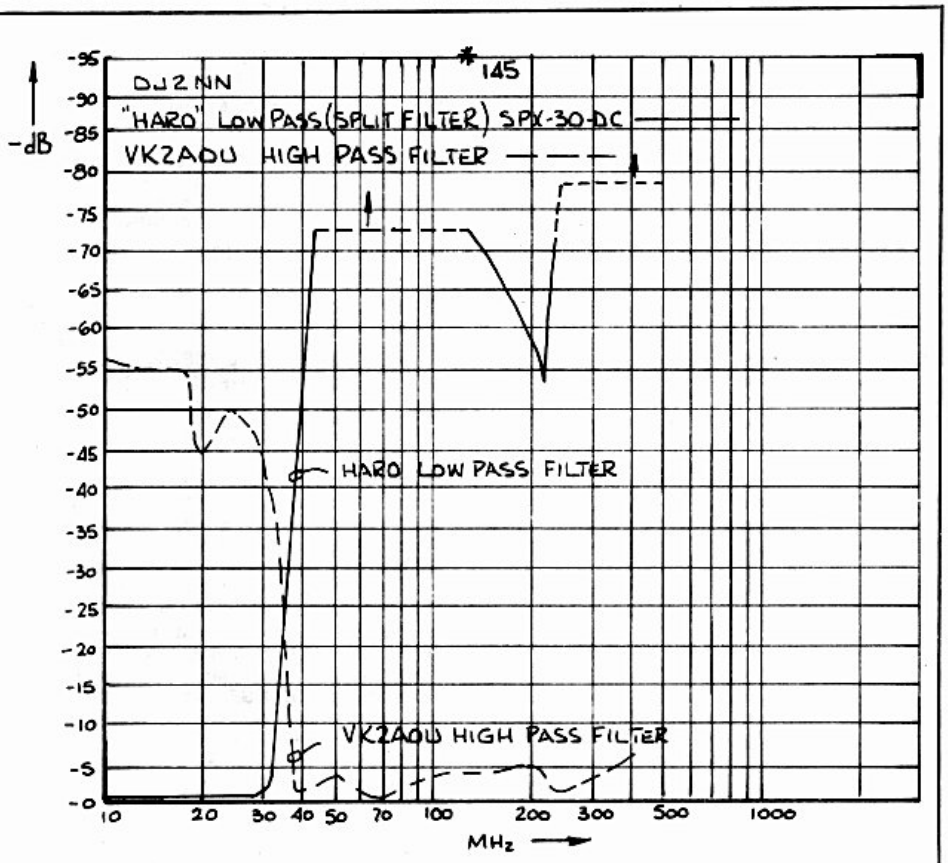


Figure 22.

up to 145-150 MHz. There is a deep undesirable break at about 215 MHz, showing here reduced attenuation.

The dotted line, representing the curve of a homemade highpass filter is very similar to the curve of the Telefunken filter in Figure 19. The VK2AOU highpass filter, Figure 22, is also shown in the centre of Figure 13.

Finally, it must be emphasised that the next filter may be partly or even completely useless if the television chassis is picking up unwanted RF like an aerial, if the filter case cannot be directly earthed and connected to a television chassis earth without unwanted C or L reactances between filter and appliance, or, if the feeder braid is carrying the unwanted RF signal to the tuner input terminal. In other words, electronic appliances must be so designed that filters can improve the appliance selectivity, immunity or electromagnetic compatibility with legal transmitter radiation. Service technicians should check whether the highpass filter their firm provides is effective when attached to the appliance (television, etc). It has happened that, such a filter did not help, and the serviceman used this to claim to the customer that the radio amateur was using far too much power causing interference. He did not understand or did not wish to admit, that the television set was so badly designed, that not even a good filter could improve the selectivity of the television set.

ar

US NOVICE BOOM

Applications for the novice licence in the United States have quadrupled since that grade of licence was enhanced with additional privileges.

Federal Communications Commission General Radio Branch Chief, Larry Welkert said there would probably be more than 6000 novice licence applications in June, compared to a normal of 1500.

The increased entrants into amateur radio had been attributed to the new voice, digital modes and band privileges given to the US novice.

Contests

Frank Beech VK7BC
FEDERAL CONTEST MANAGER
37 Nobelius Drive, Legana, Tas. 7251

CONTEST CALENDAR

NOVEMBER

14 Australian Ladies' Amateur Radio Association Contest (Rules October AR)
14 — 15 European DX Contest, RTTY Section (Rules September AR)
28 — 29 CQ WW DX Contest, CW Section

DECEMBER

4 — 6 ARRL 160 metre Contest
5 — 6 TOPS 3.5 MHz CW Contest
12 — 13 ARRL 10 metre Contest
19 Ross Hull Memorial VHF/UHF Contest (Rules this issue

JANUARY 1988

— 10 Ross Hull Memorial VHF/UHF Contest (Rules this issue

RESULTS

CQ World-Wide DX Contest 1986, Australian Results

The top scores in the World Section "Single Operator all-band'

8R1X	8 940 450 points
P4OA	8 172 930 points
PJ2FR	6 925 920 points
FY5YE	6 484 830 points
VK9NS	4 766 779 points
VE6OU/3	4 497 972 points
V3ICV	4 165 972 points
TA2BK	3 973 710 points
WR6R/KH6	3 937 192 points
ZF2FL	3 736 635 points

Congratulations to Jim Smith VK9NS, for winning the Oceania trophy.

Australian results of the 1986 WW contest.

VK2KL	A	816 920	2147	104	190
VK4BJD	A	231 957	398	78	135
VK3PU	A	120 582	235	68	106
VK2AYK	A	88 572	265	48	73
VK5ZN	A	59 605	250	34	57
VK8OB	A	10 738	70	18	34
VK6HD	28	269 973	933	21	78
VK4KWO	21	60 747	368	24	43
VK2APK	14	242 176	677	33	95
VK3SM	14	52 528	187	29	69
VK5QX	14	651	31	4	3
VK2EKY	7	103 230	381	29	64
VK3BEE	1.8	1 575	16	5	7

Rules for the 1987 CQ WW DX CW Contest remain the same as in previous years.

STARTS: 0000 UTC Saturday, November 28, and ends 2400 UTC Sunday, November 29.

EXCHANGE: RST plus zone.

MULTIPLIER: Two types of multiplier will be used.

1. A multiplier of one for each different zone contacted on each band.
2. A multiplier of one for each different country contacted on each band. Stations are permitted to contact their own country and zone for multiplier credit. The CQ Zone Map, DXCC Country List, WAE Country List and WAC Boundaries are standards.

POINTS:

1. Contacts between stations on different continents are worth three points.
2. Contacts between stations on the same continent but different countries, one point.
3. Contacts between stations in the same country are permitted for zone or country multiplier credit but have zero point value.

SCORING: All stations, the final score is the result of the total QSO points multiplied by the sum of your zone and country multiplier.

EXAMPLE: 1000 QSO points x 100 multipliers (30 zones + 70 countries) = 100 000 (final score).

AWARDS: First place certificates will be awarded in each category in every participating country and in each call area of the USA, Canada, Asiatic USSR, and Japan. All scores will be published.

To be eligible for an award a single operator station must show a minimum of 12 hours of operation. Multi-operator stations must operate a minimum of 24 hours. A single band log is eligible for a single band award only. If a log contains more than one band it will be judged as an all band entry, unless specified otherwise.

In countries or sections where the returns justify, second and third place awards will be made. All certificates and plaques will be issued to the licensee of the station used.

LOG INSTRUCTIONS:

1. All times must be in UTC.
2. All sent and received exchanges are to be logged.
3. Indicate zone and country multiplier only the *first time* it is worked on each band.
4. Logs must be checked for duplicate contacts, correct QSO points and multipliers. Submitted logs must have duplicate contacts clearly shown. The original log may be requested by the contest committee if further cross-checking is necessary.
5. Use a separate sheet for each band.
6. Each entry must be accompanied by a summary sheet showing all scoring information, category of competition, contestants name and address in *block letters* and a signed declaration that all the contest rules and regulations for amateur radio in the country of operation have been observed.
7. Sample log and summary sheets and zones maps are available from CQ. A large self-addressed envelope with sufficient postage or IRCs must accompany your request. If official forms are not available, make up your own 80 contacts to the page on 8.5 x 11 inch paper.
8. All entrants are required to submit cross-check sheets for each band on which 200 or more QSOs were made. All other entrants are encouraged to submit cross-check sheets.
9. Duplicate contacts penalty — up to one percent — three additional contacts removed, one to three percent — 10 additional contacts removed, over three percent is grounds for possible disqualification.
10. QRP stations must indicate same on their summary sheets and state the actual maximum power output used, with a signed declaration.

DEADLINE: All entries to be postmarked no later than December 1, 1987 for the phone section and January 15, 1988 for the CW section.

MAIL TO: CQ Magazine, 76 North Broadway, Hicksville, NY 11801, USA.

JACK FILES SUNSHINE STATE MEMORIAL CONTEST

The contest was held over the weekend July 18-19, 1987. This year showed an increase in participation. There were 223 stations taking part, call areas from VK1 to VK8, ZL1 to ZL4, H4, P29 and FK8.

Logs received were of a very high standard and were a pleasure to check.

This year the CW mode was introduced and, from the interest shown, a CW section will be included in next year's contest. Many thanks to those stations who operated from the rarer shires. VK4ARR/P operated from the front seat of his four-wheel drive in the Gulf country giving us Cook Shire.

David VK4NLV, is, due to business, not able to come on air during weekends. He came out of hospital on the morning of the 17th and, feeling okay, decided to have a mobile DXpedition and, together with his father-in-law, who acted as log keeper and assisted in lashing the dipole to Shire sign-posts, travelled almost 1100 kilometres and operated from the following Shires:

Monto, Eidsvold, Wondai, Kingaroy, Mundubbera, Gayndah, Murgon and Nanago.

This activity caused a problem due to the one-hour rule, however, this will be allowed for in future contests.

Jack Ford VK4SF, operated QRP running three watts to an inverted Vee and would like to see more QRP operators take part.

The SWL section winner is a 12-year-old from West Australia. The contest, as usual, was conducted in a very friendly manner and I would like to thank all those who took part and to congratulate the section winners and look forward to next years contest.

A number of suggestions have been made and these will be forwarded to our Divisional Council for discussion.

VK4AIX, Qld Contest Manager

SECTION 1(a) TRANSMITTING ALL BANDS

CALL	PTS	CALL	PTS
VK4VR	1206	VK4IY	320

SECTION 1(b) TRANSMITTING HF ONLY

VK4AIV	1196	VK4YB	1187
VK4BMW	1088	VK4MWZ	928
VK4ARR/P	847	VK4NLV/P	784
VK4NEF	778	VK4JTF	711
VK4AOE	669	VK4AQD	661
VK4FNQ	524	VK4JM	510
VK4QY	393		

SECTION 1(c) TRANSMITTING UHF/VHF ONLY

VK4ZML	363	VK4YPB	101

SECTION 1(d) TRANSMITTING QRP ONLY

VK4SF 114

SECTION 1(e) CLUB STATION

VK4WIM	1041	VK4WIJ	917

SECTION 2 STATIONS OUTSIDE VK4

VK2JBM	402	ZL3KR	382
VK3YH	363	VK2BQS	219
VK8AV	214	VK7NRR	175

SECTION 3 SWL SECTION

J McBride 114 points

CHECK LOGS

VK4AIX VK4NFE

RULES FOR THE 1987 ROSS HULL MEMORIAL VHF/UHF CONTEST

Objects: Australian amateurs will endeavour to contact as many other amateurs as possible using the contest bands.

Period: From 0001 UTC, December 19, 1987 until 2359 UTC, January 10, 1988 (third Saturday of December until second Sunday January).

Bands: 52, 144 and 432 MHz.

Modes: Any mode that your licence allows. No terrestrial repeaters are to be used for scoring. No cross-band contacts *unless* via an orbiting satellite. Satellite contacts permitted if the *uplink* is in the contest band. Contacts within ones own *Maidenhead Locator Square* will not count.

CONTEST EXCHANGE: Report, serial number and Maidenhead Locator Square. (The serial number will commence with 01 and increase by one for each QSO until 99 is reached, when the number returns to 01 again) each UTC day.

Score: One point per contact, per band, per UTC day.

Total Score: The total score will equal the number of valid contacts, plus 50 times the number of different locator squares worked, irrespective of bands.

Maidenhead Locator Map.

Operator: Single operator only. One transmission only at one time.

Log Sheets: The following details must be shown: Date and Time in UTC, Band used, Mode, Station Worked, Report Sent, Serial Number, Locator Square, Report Received, Serial Number Received, Locator Square Received.

Cover Sheet — Operator's name and call sign, address and a signed statement that the station has been operated within the contest and licence rules and spirit of the contest.

Overseas Stations: Rules similar to those for Australian stations.

Receiving Section: Logs for the receiving section must show the same information as for a transmitting station log, except for the second number exchange. If both stations participating in the contact are heard, both may be claimed, but must be listed as separate entries on the log. Scoring will be as for the transmitting log. Any scoring contact may be logged with no limit to the number of times that one station can be logged.

Awards — A perpetual trophy is awarded annually for competition between members of the Wireless Institute of Australia. The winners name is inscribed on the trophy and the winner also receives a suitable certificate. The entrant with the highest overall score for the contest will be the winner and their Division will hold the trophy for one year.

Certificates will be awarded to the highest scorer in each Maidenhead Locator Field. The locator fields will also be used to declare the winners outside Australia.

Participation Certificates: Indicate on the entry sheet and enclose a large (approximately 127 x 178 mm) SASE if a participation certificate is required.

Sample Log Entry: Note: Only Four Character Level of locator system used.

20.12.87	1750	144 SSB	VK9ZZZ	59	37	QE38	58	98	RG30
20.12.87	1759	144 SSB	VK0GC	55	38	QE38	54	23	QD95
25.12.87	0432	432 FM	VK8XYZ	59	01	QE38	53	19	PH57

Entries: Cover sheet and your total score set out to show the number of points claimed throughout the contest, plus 50 times the number of different locator squares worked. NOTE: For the purpose of this contest a separate log for each band used is not necessary.

Entries to: The Federal Contest Manager, C F Beech VK7BC, 37 Nobelius Drive, Legana, Tas. 7277. Entries must be postmarked no later than February 1, 1988.

At the time of writing these notes, the majority of Remembrance Day logs have been received and have been scrutinised. A noticeable feature is the small number of CW entries and the dearth of novice logs.

The NZART and I have synchronised the dates for the John Moyle National Field Day Contest for 1988 and this contest will not now conflict with any of the other major contest held during March. A minor change has been made to a rule in order to facilitate better VK/ZL participation So you can arrange for the wife to let you off the hook for the field day (you could try the Bicentenary excuse this time).

The Ross Hull Memorial Contest will need some explaining this time around. After much reading and historical searches, plus hours of discussion, I came to the came conclusions that my predecessor had come to — that the number of entries received by the FCM did not warrant the continuation of this contest in anything like its present form.

Much has been written over the years about the vagaries of VHF/UHF propagation and contest scoring in such a large country as Australia, which has large amateur populations in small areas with large distances between these populated centres. I have decided that a different approach should be tried with a conscious effort made to reward those stations that rotate the antenna and work weaker DX stations, rather than run up great scores by working many nearby stations.

To achieve this, and to make this contest a more challenging temptation, it has been decided to begin the use of the *Maidenhead Locator* system in the Ross Hull Contest. A perusal of the rules, as published in this column of AR, will make it obvious that a station located in a city suburb will have to chase the distant station just as much as the station located many hundreds of kilometres away. For example, a station with a large amateur population within 100 kilometres can easily make up 100 points whereas a station in the outback would struggle to make 50 points. To reduce this imbalance, I have introduced the use of the Maidenhead Locator system in order to reward the effort of looking for the DX station and, at the same time, to encourage the use of portable operations. The new rules for this contest will make it much more of a challenge with the simplified rules as a bonus. Please give it a good run and I am certain that it will produce some very interesting results.

Please make yourself familiar with the Maidenhead Locator system of Squares and Fields. This system is now used world-wide and many major contest incorporate it.

Those who have read the rules for the Ross Hull Contest will have noticed that a Participation Certificate will be available upon request by entrants. This is a clever device used by Jock White ZL2GX, and it had the effect of dramatically increasing the number of logs received for the various contests that he manages for NZART. I am expecting a similar increase in entries next year. Meanwhile, please read up and make a note of your Maidenhead Locator Square and, as I mentioned in AR, September, some information can be found in AR, January 1985, August 1985, and the ZL Call Book, if you can borrow one. A copy of the World Atlas, containing all 32400 Maidenhead Locator Squares is available from your national radio society. If not, it may be ordered directly from the address below if you enclose a self-addressed envelope, without stamps, together with six IRCs (1984 prices), so it could be a little more now.

An excellent suggestion from Col Wright VK7LZ, would be the commencement of ladders at both the HF and VHF scenes for the achievement of a worked all locator squares throughout Australia. This would be a real challenge on any band and make the DXCC look like WAC on the CQ WW weekend.

To assist those amateurs who may not have access to the articles that have already been published on the Maidenhead Locator System, I have included a made-up map of the Australasian area, together with some details of how to determine a particular location to the fourth locator level.

FINDING ONE'S MAIDENHEAD LOCATOR

Start by finding your longitude and latitude in degrees and minutes from a local map. The read the first four characters (Field plus Square) directly from a map. Then read the fifth and sixth characters (Sub-Square) from the tables below. Now you must be careful. Because a Square is two degrees wide (west-east), you must observe if you are in the left part (western part) or in the right part (eastern part) of the longitude table. Please also observe that the upper parts of the tables are for eastern longitudes and northern latitudes and the lower parts of the tables are for western longitudes and southern latitudes. This is because the locator has a constant direction, while longitude and latitude are changing directions at the Greenwich longitude and the the Equator. Do not forget to print your locator on your QSL card!

VK NOVICE CONTEST RESULTS TROPHY CHANGES HANDS WINNER FOR 1987 IS VK2NNK

As I promised, before handing the duties of FCM over to Frank VK7BC, I have completed details of the VK Novice Contest for 1987. I also hope to soon have all certificates for this year completed and forwarded to the Federal Office for distribution. Once I have achieved this, I will have tidied up, pretty well, all the loose ends resulting from the change-over.

Individual scores for the 1987 VK Novice Contest are as follows:

PHONE/NOVICE

CALL SIGN	QSOs	PTS	CALL SIGN	QSOs	PTS
VK5NOD	234	860	VK3PSG	66	249
VK3NLS	265	791	VK3KNK	55	228
VK2NNK	196	777	VK7NBC	53	197
VK5NOT	176	654	VK7NBF	45	178
VK7NDO	169	628	VK6NSH	42	174
VK7NRR	132	487	VK3PMY	24	116
VK3NXA	117	456	VK4NVS	36	102
VK3PMZ	106	423	VK6NXS	23	86
VK2LEE	100	401	VK4NEF	19	72
VK2MBI	88	392	VK3VAS	19	70
VK6NWR	84	299	VK3KCT	18	60
VK6NTJ	66	262	VK5NOC	15	56
			VK4NCM	9	47

CW/NOVICE

VK2NNK	43	156	VK5NOD	6	36
VK3VAS	48	151	VK7NBF	12	36
VK4NCM	42	87	VK3NLS	8	35
VK3PSG	16	42	VK3KCT	13	32
VK7NXA	11	37	VK6NTJ	4	11
			VK6NNN	1	2

PHONE/FULL CALL

VK3YH	211	780	VK2OE/1	78	247
VK3AJU	225	774	VK4OD	74	212
VK5QX	177	665	VK3KS	43	163
VK3YZ	157	598	VK2KL	40	148
ZL3KR	126	499	VK1RH	30	129
VK2BQS	112	461	VK5GV	26	103
VK7KZ	112	412	VK8AV	23	102
VK3CLS	56	253	VK3XF	20	86
VK3XB	60	251	VK3ZI	11	42

CW/FULL CALL

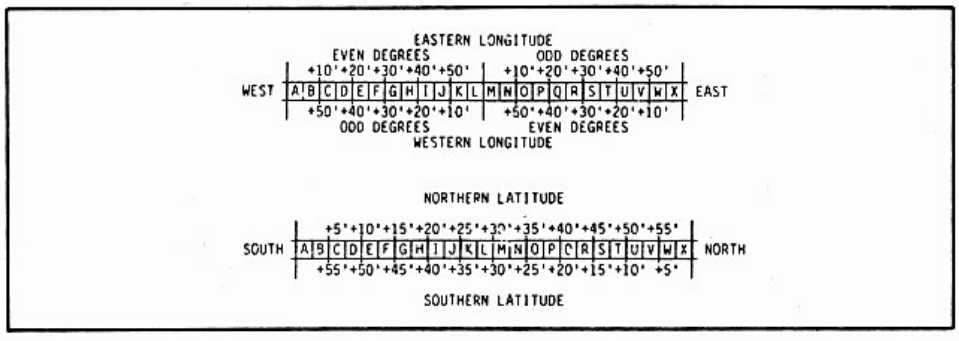
VK3CQ	66	195	VK4OD	24	66
VK3XB	53	177	VK3BDU	19	59
VK2DID	35	137	VK6AFW	12	44
VK3KS	27	96	VK5QX	8	19
VK2AZR	23	81	VK3XF	6	15
VK4BRZ	24	72			

PHONE/CLUB

VK6ANC	140	568	VK2END	35	157
VK2ATZ	145	521			

CW/CLUB

VK6ANC	4	11			



SWL			
L20282	899	VK6NNN	42

CHECK LOGS
VK1RN, VK5ADD.

The following table shows the results of combined scores (ie Phone and CW) and thus indicates the number of points gained towards the Novice Contest Trophy.

CALL SIGN	PHONE	CW	TOTAL
VK2NNK	777	156	933*
VK5NOD	860	36	896
VK3NLS	791	35	826
VK3PSG	249	42	291
VK6NTJ	262	11	273
VK3VAS	70	151	221
VK7NBF	178	36	214
VK4NCM	47	87	134

* TROPHY WINNER

Thus VK2NNK wins the Novice Contest Trophy having wrested it from the hands of Don VK5NOD, who has won the trophy for the previous three consecutive years. Our heartiest congratulations go to the winner, Steen Jensen VK2NNK. His effort was an excellent one, obviously helped by the reasonable number of CW contacts made. This was probably not too easy as many of the contestants complained about the severe lack of stations operating on that mode. I would also like to make mention of the CW entry from VK3VAS, who obviously concentrated more on CW than on phone. Len VK3NLS, again put in an excellent effort as well as submitting what I have come to expect as an immaculate log.

It is interesting to note the excellent competition for the trophy this year although the total entry of only 69 transmitting logs as against the 1986 total entry of 85 is somewhat disappointing.

Of special mention also must be the entry by VK6NNN. Peter scored only two points in the CW transmitting section and then reverted to a listening mode with a 42 point entry for that section. The station set-up used by him is certainly of great interest. He used, for his transmitter, a one-valve, home-made unit crystal controlled on 3.540, 3.560 and 3.580 MHz. His receiver was a one valve regenerative set. The Antenna Tuning Unit was as described in *Amateur Radio* magazine for June 1986. Power supply — a home-built unit providing 6.3 volts AC and 240 volts DC. Transmitter Power Output was five watts approximately. (Peter is a 15-year-old student and he demonstrates the point that it is possible to get on the amateur bands with limited funds).

It is really great to hear of such a truly basic approach to a Novice Contest and I feel that Peter VK6NNN, is certainly worthy of commendation for his effort and approach.

Now for some comments received with the logs.

"This was my first contest as I am only new to AR" — VK7NXA.
"I enjoyed it this year and it sounded as though the great majority heeded our appeal for the 'fair go'" — VK7NBF.
"I enjoyed it very much and I think I can improve my system next year. Thanks for a good contest, this is my first" — VK5NOT.
"The contest was great, but where were all the club stations? There activity was very low" VK3YH.
"...pity there were not a few more novices on the air — and I only worked six on CW!" — VK4OD.
"One question — could you explain to me how one person can give a contact with a novice call sign and then offer you one with his full call sign too?" — VK3PSG. (It is a bit unusual, Liz. I could see that a full call operator is qualified to operate a station under novice conditions, BUT!!! —VK5QX).
"Where were they? ? ?" — VK3CQ.
"One thing which I think warrants a mention is the lack of CW operators. I am pretty abysmal at CW, however, on three separate occasions I requested club stations to work me on CW and each time was told that they did not have (a) key, (b) operator, or 'we might be able to find (a) or (b) later...' I figure is I am prepared to work CW for points, surely the club stations can do the same" — VK3NLS.
"Unfortunately, I was working most of the weekend ... spent a lot of time calling CQ on CW on 80 to no avail ... perhaps this contest should be amended to the VK Novice CW Contest exclusively ... shooting one's mouth off into a microphone is really no indication of a contest" — VK8AV. (Anyone else with ideas? — VK5QX).
"Again a large number of operators using non-standard phonetics or using no phonetics at all" — L20282.
"Had transmitter problems which were not fixed until two hours into the contest. No answers to my CQs on Saturday night (our time) but had one answer on Sunday (our time) so I entered the receiving section in between my fruitless CQs...now know the importance of a good antenna...the 20 metre long feeder tuned aerial was not up to my successful G5RV at home ... staying with my grandparents who live in Safety Bay 220 kilometres north of my home QTH... Peter (age 15)" — VK6NNN.
I feel that some consideration could be given to, say, a six-hour period of operation as a separate Section. Those able to run the full 24-hours could still do so" — VK3YZ.
"I enjoyed my first Novice Contest and I will be back again next year. One problem is knowing who is a novice station. Also, are there Novice stations in New Zealand" — VK2LEE. (With the proliferation of call sign suffixes these days it can be a little hard to differentiate grades of licences Lee. I began back in the days when there was only one class of licence. My understanding is that ZL does not have any "Novice" stations in the form that we understand. — VK5QX).

Finally, I come to a letter which I received from Ken VK3AJU. I understand that Ken is a journalist by profession. He certainly provides a good story. Maybe he should be writing his own column in *Amateur Radio* magazine. I will leave you to judge as I provide most of the text of his letter.

"I certainly shot myself in the foot in the recent Novice Contest.

"Hoping to avoid the usual tedious typing of the log, I resorted to carbon paper (it still exists, although one has to search to find it), I would take extra care with my handwriting and keep the log in duplicate, the carbon to be sent to you as my contest entry.

"Alas, the carbon copies were not fit to be used as kitty litter and the top copies not much better as far as readability for anybody but myself. So I threw the carbons away.

"Unfortunately, I also threw away one sheet of the top copies. Disaster! In a small country town one could have put on gum boots and repaired to the local rubbish tip with a rake. Not so in metropolitan Saint Kilda with its hi-tech compactors and destructors.

"There was, of course, the invisible impression of my writing on the page previous to the one destroyed. Could this be lifted to visibility by shading with a lead pencil like we used to make pencil rubbings of pennies at school? No success.

"An electron microscope, perhaps? Possibly it would reveal the pattern of rupture of fibres in the paper sheet immediately under the one destroyed? Perhaps the tribophysics department at CSIRO could take it on as a project?

"Even better, perhaps, the police forensic department. Surely they must have handled similar problems in fighting white-collar crime?

"Unfortunately, the contest entry date drew near and made it impossible for me to recruit any of these agencies in what I am sure they would have found a challenging research project.

"All that is left of the missing 26 QSOs are the doodles on the reverse of the following page. I enclose it for your interest, or rather a photocopy of it.

"How many points do the missing QSOs represent?"

At this stage Ken went to quite some lengths to explain the way in which the log was made up, average contacts and points per page, average number of duplicates, best ad worst case scenarios, etc. He then stated that he would leave the matter to the "inherent fair-mindedness of the Contest Manager" to decide what his accepted score would be. Ken will be able to tell just how fair-minded I am by his perusal of the results. I might ask after such a story just what leeway did I have left in which to manoeuvre?

Ken concludes, "If ever I do manage to keep an original log clear enough to submit as a contest entry, it will be by photocopying, not carbon paper! See you in the Remembrance Say. Cheers, Ken VK3AJU.

"PS. I'm sure your title should be Contests (plural) Manager, not Contest Manager."

So there it is for yet another year. I would hope that next year many more operators, particularly novices, will decide to enter in the VK Novice Contest. It is a good fun contest and always friendly. I would also hope that more clubs will keep this one in mind and not only enter the club station, but also help publicise this activity designed to encourage the newcomers to our hobby.

For now, again I wish you all the very best in all your activities and ask you to continue to support the efforts of our new FCM, Frank VK7BC. Good luck.

73 de Ian VK5QX.

1987 NATIONAL CW SPRINTS RESULTS

There were 25 logs received, so the level of participation could have been higher, but comments suggest this "quick" CW contest was highly enjoyable. Regrettably, no logs were received from Novice or Novice/Limited operators, but their presence was noted in their having provide contacts for others.

The overall winner, who will receive a trophy, was John McMillan VK2BAT. Congratulations from the Adelaide Hills Amateur Radio Society and the VK5 Division, John.

Certificates were not awarded in some divisions simply because no log was submitted — this should encourage more participation next year!

It was pleasing to not that there were no discrepancies found in any of the logs submitted.

Congratulations to the winners, and on behalf of the Society, thanks to all those who took part.

Logs submitted and points claimed:

VK2BAT*	29	VK2AIC	18
VK2CDG	13	VK2SU	11
VK3JA*	26	VK3OA	25
VK3BGH	24	VK3XB	15
VK3KS	10		
VK4OD*	25	VK4SF	21
VK4YB	21	VK4BIL	15
VK5ADX*	27	VK5GZ	25
VK5FN	24	VK5ZN	23
VK5ARC	21	VK5AYD	15
VK5AF	11		
VK6ABP*	26	VK6HQ	24
VK6AFW	16		
VK8AV*	23	VK8HA	12

Operator's Comments:
"...very enjoyable..." — VK2BAT.
"Great fun TKS" — VK2SU.
"Thanks for two most enjoyable contests..." — VK3BGH.
"I really enjoy these short contests so keep up the good work." — VK4SF.
"...a lot of fun..." — VK4BIL.
"...disappointed with the number of operators ... one hour duration is ideal." — VK5GZ.
"I enjoyed participating and am looking forward to the next one." — VK5FN.
"Thanks for an enjoyable hour. I look forward to the next one." — VK5ZN.
"CU NXT YR" — VK5ARC.
"Thanks ... There is no excuse for not being in it..." — VK8HA.

Hans Smit VK5YX
National CW Sprint Manager

1987 NATIONAL PHONE SPRINT RESULTS

The level of activity, on-air reports, and comments included with logs (see below), all indicate the success and popularity of the second annual National Phone Sprint held on July 18, 1987.

On behalf of the Adelaide Hills Amateur Radio Society and the VK5 Division of the WIA, congratulation are extended to the overall winner of the Phone Sprint and the certificate winners.

The overall winner, who will receive a trophy for his efforts, was Ian Buchanan VK2KL. Congratulations Ian, and thank you for your effort and kind remarks.

About 115 stations participated in the Sprint with VK4 stations much in evidence. This was the result of the Sprint overlapping the last 30 minutes of the Jack Files Contest. Many considered this an advantage, while a few suggested that the two events should not clash.

This year I operated the Society's club station, VK5BAR, and found this to be a rewarding experience — both in promoting the Sprint and the opportunity to thank participants for their support. When VK4 stations were contacted, they

appreciated our additional points for the Jack Files and expressed best wishes for the success of the Sprint.

There were 37 logs received from VK1-8, ZL1 and ZL3. VK0DS did not submit a log but delighted many with his operating in the Sprint. Thanks Doug, for being there!

One operator did not sign the mandatory declaration which was required with all logs. As it happens, his score was not the highest in his area so it doesn't matter, but it would be a shame to miss out on a certificate because of a failure to abide by what must be the simplest rules of any contest — be careful next time!

VK7 and VK8 certificate winners had no competition — a case of be in it and win it! Are you other VK7s and 8s going to let it be that easy next year?

Congratulations to the certificate winners (indicated by asterisks in the following list) and thanks to all participating stations.

Logs submitted and points claimed:

VK1PJ*	53	VK1ZL	46
VK2KL*	54	VK2RJ	48
VK2LEE	42	VK2CXX	38
VK2ENX	33	VK2ENU	22
VK2AIC	18	VK2CJH	16
VK3BGH*	42	VK3CRA	36
VK3JA	35		
VK4YB*	44	VK4OD	40
VK4BIL	34	VK4AOE	14
VK5AC*	45	VK5FN	42
VK5KGS	37	VK5RV	31
VK5GZ	30	VK5AYD	29
VK5ADX	23	VK5PEB	22
VK5ASH	21	VK5ANW	19
VK5YX	12		
VK6ABP*	51	VK6APK	34
VK6AFW	28	VK6LD	23
VK7NRR*	33		
VK8AV*	48		
ZL3KR*	28	ZL1AQO	9

Check Log:
VK5BAR 68

Operators Comments:

"Congratulations to all concerned . . . a well organised contest." — VK2KL.
"These Sprints are a good idea. Please to work VK0DS." — VK5GZ.
"How about two Sprints a year, each mode?" — VK2LEE.
"A great little contest . . . look forward to next year." — VK6APK.
"It was great fun! Thoroughly enjoyed it." — VK5ANW.
"A lot of good fun . . . will sure CU next year . . . Jack Files overlapped and probably caused lack of VK4 participants this year." — VK4OD. (Not so, Tom. See summary — VK5SJ).
"And it was good fun again!" — VK4BIL.
"Very impressed with idea of the one hour contest. Thoroughly enjoyed it. Only comment . . . why overlap with the Jack Files contest?" — ZL3KR. (We are working on it, Alan. — VK5SJ).
"The one hour time period was just right. I think you have found the right formula for this event." VK3CRA.
"What an exciting finish in the last few minutes! Why the overcrowding around 3.600-3.620 MHz when we had the whole phone band? Wish stations would check their logs before wasting time on repeat contacts." — VK6AFW.
"Enjoyed participating, looking forward to the next one." — VK5FN.
"Only recently back on air after many years absence. What a great comeback. Look forward to the next Sprint." — VK5ASH.
"Thanks . . . for a really enjoyable contest." — VK6ABP.

John Hampel VK5SJ
National Phone Sprint Manager

ar

Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

We must always be aware, when hearing intruders, of the possibility that we may be hearing intermodulation products. This was brought home to me just before I began work on this column, as I was listening to the ABC on 576 kHz. From time to time, I could hear CW popping up on the receiver, an AM model, with a turntable and cassette deck. The signal was about strength four. I listened for the next transmission, and the call sign was "VIS", which is Sydney Radio, but, of course, does not have any output on 576 kHz. So, I went to another receiver, and the CW disappeared. So you see we must treat with suspicion any more or less local transmissions that we hear in the event that it may well be that the receiver is the offender, rather than the originating station.

There were 91 AM mode intrusions reported for July 1987; 142 using CW; 42 using RTTY; 25 intrusions using other modes, and 36 intruder stations used their call signs on air. Reports were submitted by VK2DEJ, VK3s AMD, PUW, XB; VK4s AKX, BG, BHJ, BTW, DA, KHA; VK5GZ; VK6RO; VK7RH and VK8s JF and HA. Many thanks to those people for helping-out.

The infamous USSR Naval intruder "UMS" has made his seasonal change from 20 metres back to 21.032 MHz for our summer. Listen for him there if you are short of stations to report. The intruder "KGB" (sounds ominous!) has appeared from time to time and, along with "VRQ" (Vietnam), has caused interference to the CW transmissions from W1AW.

The DOC has undergone a name-change and is now the Department of Transport and Communications (DOTC). I have written once again to "ORARI", the Indonesian Amateur Radio Society, asking for their help in having an intruder removed from 14.051 MHz, who uses CW there. Purely commercial traffic, definitely non-amateur and should **not** be there.

In the October column I mentioned my computer had 'crashed', and now I have it fixed. Following Murphy's Law, it also blew a fuse in the power supply, which caused some confusion. However, I seized the opportunity to secure another computer (the same brand), but this time with a dual disc drive, which is marvellous. However, it almost brought me back to "square-one", with all the different commands, etc. The existence of this column in AR is, however, proof that at least I can get the word-processor a little under control! The difference between cassette and disc drive is amazing.

Have a listen on 3.593 MHz on Fridays at 0700 UTC, for the Intruder Watch Net, and all are welcome to join. I recently has an inquiry from an amateur who mentioned that it is difficult for newcomers to the hobby to know what is going on with regard to whether they can be sure they are actually hearing an *Intruder*, and also the somewhat confusing different mode designations that are used. I will mention some of the modes in the column from time to time, and try and help to clear some of the confusion. There is a pamphlet in existence, which explains a lot, and can be obtained by writing to me (column address) or all the State Intruder Watch Co-ordinators should have copies. VK2 Sydney residents can pick up one at the WIA Divisional Office.

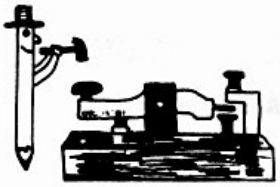
The mode for the month: A1A — This, of course, is CW, and we all know what that sounds like. The only thing we need to know is where does it become an intrusion if it is *non-amateur*.

1. It is **not** an intruder on 80 metres.
2. It **is** an intruder on *any* section of the 40 metre band from 7.000 to 7.300 MHz.
3. It **is** an intruder between 14.000 and 14.250, but **not** from 14.250 to 14.350 MHz.
4. It is **always** an intruder on **all** of the 21 MHz amateur band.
5. It is **always** an intruder on **any** section of the 10 metre amateur band.

Do not forget, I said ***"Non-Amateur CW"***.

Better go before the Editor kicks me out! See you in December.

ar



Pounding Brass

Gilbert Griffith VK3CQ
7 Church Street, Bright, Vic. 3741

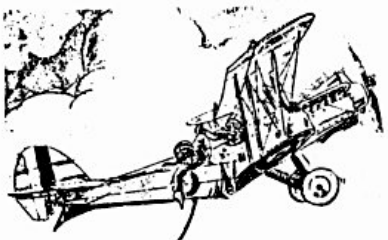
It seems odd to be writing about the latest bit of fun in the RD Contest knowing that, by the time you read this, the VK/ZL/O Contest will be over as well. I am glad to see the numbers increasing in the Morse section, it certainly makes things more interesting when the bands are crowded.

We really do need a few more Morse operators on the 160 metre band though. How about some new antennas this summer, fellas?

Work is piling up here as I have a number of projects in the pipeline. My "Drew Diamond" home-brew is back from it's sea trip (I loaned it to a real "Sparky"), and it needs a re-build, with the modifications featured in September AR, I hope.

I still have not built that 8044 ABM keyer using the new chip, so I hope to incorporate that in the QRP rig, too. It is a lot of fun talking to others who have built the same rig, plenty to discuss, never mind the weather.

A letter came from Vic VK5AGX, this month. We are competitors in the contest scene and usually work all bands in any one contest. He encloses the following extract about early wireless operating procedures, and mentions that he first flew in 1932 in Vickers Virginia bombers which had the same attributes as the ones in the article.



71 YEARS AGO — Wireless Operating

How the RFC did it in the First World War

These instructions for Observers appeared in "Notes for the Preliminary Training Officers of the RFC as Pilots", published by the Stationery Office in 1916.

Wireless during a Flight — The aerial wire is generally about 150 to 250 feet in length, so you should never attempt to let it down until you are well above that height, also making allowances for trees, buildings and other objects.

When up a sufficient height, say 500 or 600 feet, let down the aerial. Do not allow it to run out too fast, this is the most frequent cause of the wire breaking in the air or of tangling. If the wire becomes entangled it will cause difficulties and accidents when landing, as it will be impossible to wind it in completely, and the hanging wire becomes a source of danger. It may become entangled in trees and so might bring down the plane. In such a case it would be advisable to cut away the aerial. The best method of letting out the aerial is to slowly release the tension on the brake and letting the aerial run out smoothly and gradually, at the same time steadying the drum with the other hand. Let out the whole of the aerial, the rope and the shock absorber. If the set has been properly adjusted and put in order, no further adjustments need be made, depress you key and see if the ammeter is fairly high. If the ammeter reading in the air is low, or the spark is bad, the battery may be run down or the trembler not properly adjusted, usually caused by not tightening the lock nut up sufficiently during the ground test, or the spark gap electrodes may be dirty or wrongly adjusted. The fault may be also outside and out of your reach. The only thing you may do to improve matters is to adjust the spark gap. Under no circumstances make any alterations or adjustments while flying except that of the spark gap and the tuning clips, and never adjust the latter with the key depressed.

Before sending any message, send the letter V for three or four minutes and also your call letters at times. This is to give the operator on the ground an opportunity to tune his receiver so as to get best results, and the sending of the call letters is advisable so that the ground operator may keep in touch with you and not take signals from another plane working within range, whose messages are intended for a different battery. Before coming down reel the aerial drum right up and after landing see that the accumulator is removed for testing and if necessary for recharging.

General Notes — Never attempt stunts on an aeroplane fitted with wireless. Do not sacrifice clearness of signals for the sake of extra speed. Always test the spark before leaving the ground. (Unless a ground test is carried out). Remember that the strain on an operator listening intently for your signals is great. The signals are never very strong and they vary, also he has to distinguish between your signals and other wireless sets working within range. A complete understanding between the pilot or observer and the ground wireless operator is necessary to secure the best results. Always ask the wireless officer for assistance or advice when in difficulties. A ground test should be made sometimes at night, with the aerial out, to observe for any sparking. All parts of the set, and especially the bare copper helix, must be kept clean. The fair lead must be kept free from oil and mud or dirt, and good contact with the aerial ensured under all conditions in the air. If the aerial makes bad contact, or touches any part of the machine, intermittent and weak signals will result. The cord between the drum and the aerial may become loose or worn, or it may stretch or become damp; this should be seen to. Great care should be taken that all screws and lock nuts are tightly secured before every flight, as the vibration is likely to shake them loose.

I have a pile of literature, all of some interest to Morse operators, and thought the following information from Tony Smith G4FAI, would either create a stir or ease worried minds, I am not sure which. It was a help to me in a recent talk I gave at the local Apex club. It is amazing how little people outside the field know about amateur radio and communications in general. Anyway, they did take a few WIA brochures, so maybe you could try a talk to some of the service clubs in your area. They are usually happy to have guest speakers, and always supply you with a free dinner too!

RADIO AMATEUR INFORMATION SHEET No 3: MORSE

Issued by the Department of Trade and Industry Radio Regulatory Division — UK

The Department is often asked questions about the use of Morse code. This information sheet gives general guidance on Morse and answers those questions.

Why bother with Morse?

It is a requirement of the International Radio Regulations that those who work the HF and MF bands, with their potential for long-distance communication, must have a knowledge of Morse code. Also, Morse is very effective; it is often able to provide radio contact when other modes have failed.

What are the advantages of Morse?

As well as its effectiveness, the narrow bandwidth of Morse uses the radio spectrum most efficiently, allowing parallel contacts to take place within a small spectrum space. This is a great advantage in crowded band conditions. Morse is a truly international language which enables two-way communication between amateurs who would otherwise be unable to understand each other.

Also, Morse need only very simple transmitters and receivers, in contrast to the increasing complexity of equipment using other modes. So, through Morse, youngsters and others with limited resources can enjoy and learn about radio communication.

Is it true that the use of Morse generally is declining?

Yes, its usage in the maritime service and other professional services may be declining but there is no reason to suppose that this will be reflected in the amateur service where it is still very popular. Almost all the world's national amateur radio societies wish to see Morse continued because it is invaluable for long-distance communication and for breaking down language barriers.

I am not interested in Morse so why can't I just use speech contact on the HF and NF bands and not bother with the Morse test?

It may be true that some who pass the Morse test prefer to use only speech contact but the International Radio Regulations must still be followed and all those who work the HF and MF bands must recognise and understand Morse transmissions. This requirement matters because some of the bands are shared with other services and it may be necessary to give way in your communications to a Morse transmission. It is important that amateurs do not miss a request to move frequency through a lack of Morse training.

Many who begin by thinking that learning Morse is hard work and that they will never use it, become converted to its good points. A Morse test is within the spirit of self-training associated with amateur radio. To pass the Morse test is a large step in the enjoyment of the hobby, leading to that most rewarding experience of long-distance communication.

Will the test be too difficult for me?

Keep at it and remember there are about the same number of Class A licensees as Class B licensees so this is positive proof that you too can get there. Learning Morse take discipline — you need to be committed to pass the test. Most think the rewards are worth the effort.

The Department has helped by permitting Class B licensees to use Morse at their own stations, so they gain practical experience to

prepare for the test. The Radio Society of Great Britain (RSGB) also co-ordinates a Slow Morse Transmission service to help Class B licensees practice their sending and receiving of Morse before taking the test.

What does the test contain?

There is a sending and then a receiving portion of the test in plain language each lasting three minutes. This is followed by a sending and then a receiving portion of numbers each lasting one and a half minutes. The speed tested is 12 words per minute.

British Telecom International (BTI) was running the test but now the Radio Society of Great Britain is to undertake it, why?

There were criticisms about the rise in the price of the test and the small number of BTI testing centres, usually the Coast Stations, meant high travel costs for some candidates. So the Department decided to invite fresh proposals for running the test. The RSGB's bid was the most attractive.

Amateurs testing amateurs and a Society with no examination experience. Does this make sense?

The Department wants to give the best possible service to radio amateurs. The RSGB proposals offered a reasonable test fee and at least 70 testing centres, one in each county, region or designated Island. Tests will be held every two months at each centre.

The Department will maintain its close interest in the amateur Morse test and it will set up a steering group to monitor and control, with the RSGB, the running of the scheme. It is not unusual for a national radio society to run the Morse test. After all, a national society will certainly have the best interests of the amateur radio hobby at heart. In the longer term, as we said earlier, it may be that Morse is almost exclusive to amateur radio, so the national society may eventually become the remaining specialists on the subject.

Will the test change?

Possibly, the Department is always receptive to any ideas for improvements to amateur radio. The RSGB, representing a large body of amateurs, liaises continually with the Department about the hobby. Change often occurs via this relationship.

If you have any problems or queries about amateur radio you are welcome to contact the Department of Trade and Industry.

We will be happy to help you.

That's it for this month Knights, sorry about the short shrift last month, but the Editor and I decided to cut a letter which would have filled the column.

PHONE PATCH UPDATE

A component value in the phone patch Line Isolation Unit (LIU) article in the September edition of AR magazine was incorrect.

The capacitor across the line — the one shown in the component overlay nearest to the switch wires — was marked 0.1 instead of 0.01 and the incorrect value would reduce the frequency response resulting in muffled signals.

LIU Designer, Geoff Donnelly VK2EGD, who found the error also advises that printed circuit boards for the unit are available from RCS Radio Pty Ltd, of 651 Forest Road, Bexley, NSW. 2207, phone (02) 587 3491, at a cost of $8 approximately.

Geoff, who is handling the certification process for the LIU requires those submitting completed units to supply their name, address, call sign, and the telephone number of the service for which the LIU is principally intended.

The transformers approved for use in the LIU are:

Arlec 45035 Telecom Eng App Ra81/144 and
Ferguson MT627 Telecom Eng App RA83/177.

The isolation capacitor Telecom Eng App RA85/141 is available from Jaycar in Sydney and Melbourne.

—Contributed by Jim Linton VK3PC

How's DX?

ZP450A — PARAGUAY

For the first time ever, the Paraguayans have had a special call sign operational. The event began at 0000 UTC on August 8 and concluded on August 16 at 2400 UTC. The main station was located in the centre of Asuncion as part of celebrations to mark the 450th anniversary of the foundation of Asuncion. To lend support to the special call, 24 other stations operated with a portable letter from the home stations.

A total of 12 000 QSOs were made on all bands including CW, RTTY, SSTV and SSB, and all documents were sent to the ARRL for approval as a valid prefix for Paraguay. Approximately 200 countries were worked.

A special commemorative QSL card will be sent to those requesting it via airmail upon receipt of their QSL and some IRCs to cover return postage. All other QSLs will be sent via the bureau. SWLs will also be acknowledged.

The Radio Club Paraguayo would like to thank all stations who contacted the special call signs and would welcome comments and suggestions for future operations.

QSLs to Radio Club Paraguayo, PO Box 512, Asuncion, Paraguay, or via the bureau.

Support stations were:
Fredy ZP5AL/A, Perdro ZP5CCG/G, Reina ZP5RFN/N, Simon ZP5JU/U, Miguel ZP5BEE/B, Hugo ZP5HEB/H, Alberto ZP5PX/P, Wolfi ZP5VG/V, Fred ZP5CF/C, Alberto ZP5JAL/J, Luis ZPJCY/Q, Pedro ZP5WU/W
Mike ZP5CDV/D, Walter ZP5CPN/K, Malcom ZP5RG/R, Rosario ZP5MJY/X, Edgar ZP5EU/E,

WORKED ON THE EAST COAST

JUNE:
ZB2/GB0SWR/MA on 14 MHz CW.
YS1GMV on 14 MHz SSB, QSLs to W3HNK (prompt reply received).
9Y4NW on 14 MHz CW.

JULY:
YE9X (Indonesia) 7 MHz SSB, QSLs to YC9VX.
3C2A (Equatorial Guinea) 14 MHz SSB, QSLs to AK1E.

AUGUST:
OF3UJ (Finland — Special prefix for 70 years of Independence Celebrations) 14 MHz SSB.
YV1BVJ on 10 MHz CW.
HS0B (Thai Amateur Radio Society Club Station, Alan operator) 14 MHz SSB.

Alan says he is operating on the weekend around 0030 UTC on 14.175 MHz SSB. Originally from ZL, he has lived in HS for the past 20 years. His direct QSL address is PO Box 2008, Bangkok, or via the bureau. Alan believes more activity is expected in the new year from Thailand as new regulations were passed and accepted by the government of Thailand. This will result in more amateur activity.

KP4YD on 7 MHz SSB.
KC6GM (Republic of Belau/Palau, formerly the Western Carolines, Toshi operator)14 MHz SSB and CW. QSLs to JR1BMU.
T20EE (Tuvalu) on 14 MHz SSB. QSLs to N6NDH.

Contributed by Steve Pall VK2PS
ar

QSP

NATIONAL MDS NETWORK PLANNED

One of the leading players in MDS is Corporate Data Services (CDS-TV), a Melbourne company which has run a non-domestic service called the Real Estate Channel in Melbourne since April 1986.

CDS-TV plans a national network of MDS services once the DOC has overcome frequency planning issues associated with the proposed channel allocations.

Carl Johnson, executive director at CDS-TV and secretary of the MDS Applicants Committee, said test transmissions of a Band A service in Sydney on 2109.750 MHz had already commenced from a transmitter located on Centrepoint Tower.

(Future services will have to locate their transmitters within a 500 metre radius of the first licensed service, according to DOC regulations).

Programming for the service will be split between business, real estate and medical. The business section will occupy most of the daytime programming.

As this services is on a Band A channel, there will be no government encryption requirements. However, Mr Johnson said CDS-TV would be using one of the PAL over-the-air encryption systems to provide user addressability and security. He said there are over 100 of these types of systems available, with Paytel being probably the foremost.

To receive the service, subscribers will need to lease a decoder and a microwave-to-VHF downconverter as well as paying a subscription fee. The service will also be subsidised by advertising.

(Network Technologies, a Sydney company, is also currently developing special interest business television on a subscription basis. Its proposed Investment Research Network is similarly designed for the financial sector).

CDS-TV is also one of the many to apply for a VAEIS licence on Band B. Services on this band must be B-MAC encoded to prevent fortuitous reception. With a sport and entertainment base, the services will come into direct competition with the recently established club and hotel satellite services for the non-domestic market.

Other applicants for the Band B licences include Sportsplay and ICOM. Mr Johnson believed that as many of the established broadcasters had already put their money into satellite areas they would not be making a play for MDS.

Australian Downconverter

Australian industry is well placed to take part in the MDS expansion as the Band A downconverters are, in fact, made in South Australia by Codan.

In 1984, AAP commissioned MITEC, the microwave technology development centre at the University of Queensland, to develop a high quality downconverter as those available overseas did not meet its requirements.

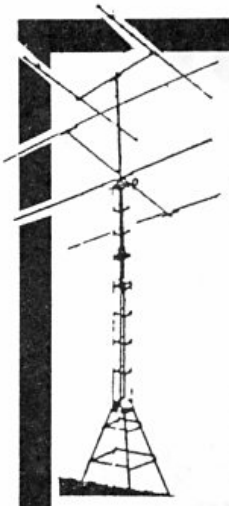
AAP, which has run a data service on Channel 3 in each major capital city since October 1984, put requirements and specifications to MITEX for a downconverter that would minimise reflection and corruption.

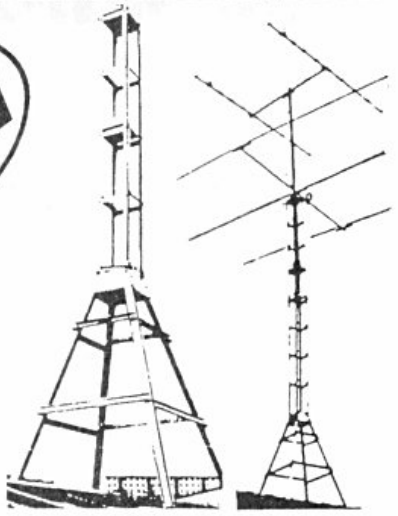
The completed design was transferred to Codan in Adelaide where hundreds of units have since been made. AAP plans to develop the downconverter for the overseas market and is looking at Codan among other companies to manufacture it.

—From *Broadcast Engineering News*, February 1987

EMTRON'S MODULAR ANTENNA TOWERS

NEW



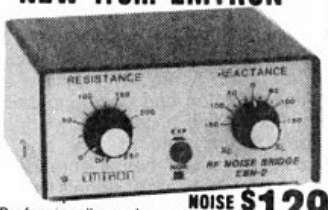


Ideal for ground or roof mounts.
Modular, portable, extremely rugged.
• One man assembly and installation • Lightweight
• High quality aluminium alloy • High stability

Finally here are strong, sturdy antenna towers that are simple to assemble, lightweight, strong and can be used on your roof-top or packed up and used in the field. Available in three modules. 3.6m (11½'), 5.5m (18') and 7.5 (25'). The 11½ foot model has base and one tower module; the 18 foot has two tower modules; and the 25 foot model contains three tower modules.

MODEL ET-1 Base plus 1 tower section, and hardware $497
MODEL ET-2 Tower section only $190

NEW from EMTRON



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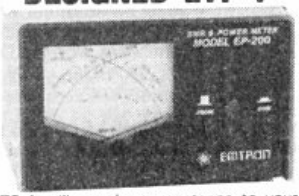

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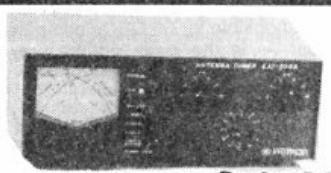

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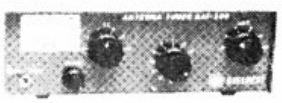

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COMMONWEALTH CONTEST

COMMONWEALTH CONTEST 1987 — Results

In past years, the fact that conditions were good or poor seemed to have the greatest effect on the size of the VK entry in this contest. Has another factor been introduced — Australia Post, maybe, with it's annual increases in postal charges. We hope not! From a peak of 66 VKs who submitted logs in 1984, our figures have gone down, 58, 52, to 44 this year when conditions were really fairly reasonable. Though the Commonwealth Contest has, for the last 20 years, occupied the second full weekend in March, and will continue to do so, a clash this year with the VK/ZL Field Day contest must surely have reduced our numbers.

We congratulate a new winner for the VK section of the contest, Kevin Smith VK6LW, who was level with the eastern State's leaders until the last few hours when an opening on 14/21 MHz experienced only in the West, enabled him to shoot to the front, and with 372 contacts, into fourth place overall. Russ Colestron VK4XA, who had won each year (excluding 1979) from 1978 to 1986, had to be content with third place behind VK2APK, but he will surely come again!

Outright winner was VE7CC, with 398 contacts and a marvellous 171 bonuses which must surely be a record. Out at the end of the world, our best were VK6LW 135, VK2APK 132, VK4XA 125 and VK3MR 105 — no others over the century. Appearing in the results, but not heard here were calls from 5N, 8P9, ZZ, ZD8, and other exotic places, as well as 68 from the UK — even a VP8 appeared in the statistics.

A shortage of bonus points in the Receiving Section contributed to Eric Trebilcock's second placing behind BRS 1066. The RSGB special station, GB5CC, was voted a good addition to the contest and to the list of bonus areas, and will again operate in 1988. See *The GB5CC Story*.

TOP TEN

1	VE7CC	5391	6 GW3YDX	4488
2	VE6OU/3	5123	7 G4BUD	4213
3	6Y5HN	4794	8 VE3CRG	4199
4	VK6LW	4548	9 G4EDG	4066
5	G3FXB	4536	10 G4CNY	4058

RECEIVING SECTION

2 Eric Trebilcock BRS 195 1955

AUSTRALIAN SCORES

4	VK6LW	4548	79	VK6AJ	1408
11	VK2APK	4055	80	VK7RY	1403
14	VK4XA	3703	81	VK8HA	1395
23	VK3MR	3050	91	VK3AUQ	1150
27	VK2BQQ	2788	95	VK4BKM	1090
28	VK7RO	2783	103	VK4TT	845
31	VK5AGX	2738	104	VK3FC	835
32	VK3ZC	2660	108	VK3DOV	805
36	VK4XW	2375	110	VK2SU	800
37	VK6RU	2367	111	VK4BRF	795
40	VK3DQ	2140	114	VK3KS	755
41	VK3XB	2138	120	VK6ED	665
47	VK5GZ	2045	128	VK6RZ	625
48	VK5BN	2030	129	VK3XF	625
49	VK3MJ	2020	131	VK2AIC	600
50	VK5UM	1960	133	VK7CH	588
51	VK2DID	1945	135	VK3JI	540
55	VK2EL	1823	137	VK2AZR	520
57	VK3BDH	1775	144	VK7ZO	335
58	VK5RG	1698	145	VK2GT	305
62	VK3CGG	1630	146	VK5BS	300
66	VK2AQF	1550	148	VK3VQ	255

Single band entries among the above were:
3.5 MHz VK7ZO (Overseas Winner)
7.0 MHz VK4BRF (Overseas Winner), VK5BS
14.0 MHz VK4TT, VK3JI, VK2GT

PACIFIC AREA SCORES

17	ZL1AIZ	3468	38	ZL1HV	2272
22	ZL2BR	3083	98	ZL3AGI	1025
33	9V1TL	2455	108	ZL2ALJ	805

VK TEAM EVENT

For the fourth year, New South Wales has won the four man team title. In recent years, some fine operators have surfaced in some of the smaller States. With the larger number of VK2/3 participants there to be worked, surely a team of four could be organised to knock off NSW or Victoria for a change!

TEAMS	1987	1986	1985	1985
VK2	10611	11890	10632	16272
VK3	9988	10391	8784	14549
VK6	8988	9618	6482	10303
VK5	8773	8910	8761	8965
VK4	8013	10143	8359	12475
VK7	5109	6274	7982	7571

The only other areas with more than four entrants were:

G	17303	14408	13193	17064
VE3	14830		8626	

AWARDS

The Gold Medallion for the leading VK entrant was won by Kevin Smith VK6LW.

The Silver Medallions for the leading State Team were won by D F Kiesewetter VK2APK, K Nad VK2BQQ, S W Wardle VK2DID, and S Bourke VK2EL.

HOW THE LEADERS MADE THEIR SCORES

QSOs/Bonus per band 80-10 metres (claimed).

VE7CC	57/37	86/46	225/64	33/24	-
VE6OU/3	68/30	175/52	257/44	5/5	-
6Y5HN	71/20	138/41	11/10	-	
		254/53			
VK6LW	25/20	98/37	151/49	97/28	1/1
G3FXB	37/20	88/50	131/72	17/17	2/2
GW3YDX	39/21	87/49	134/69	17/17	2/2

As promised last year, Alan Gray G4DJX, has produced a table showing the areas contacted and the number of suffixes (different stations) worked from VK — of course, by the stations who submitted logs.

From it you will see that 39 call areas were worked, but the table for the UK which is apparently in a better global position for working DX (as if we didn't know) shows that 53 were worked from there. Total QSOs reported were 16989 compared with 13405 last year, while 28 MHz was responsible for 56 QSOs compared with 67 last year — is the cycle on the way down again?

ANALYSIS OF VK OPERATION

AREA	3.5	7	14	21	28	TOTAL
C2	1	1	1			3
G	2	84	157	84		327
GB		1	1	1		3
P2		1	1			2
VE1		2				2
VE2		2				2
VE3	4	19	6			29
VE5		2				2
VE6			1			1
VE7	4	5	5	2		16
VK1	1					1
VK2	10	18	13	6		47
VK3	16	16	23	11	4	70
VK4	11	6	20	4	1	42
VK5	12	11	13	5		41
VK6	6	10	10	4		30
VK7	6	7	6	4	2	25
VK8	1	2	2	2		7
VK9L	1	1	1	1		4
VK9N	1	1	1			3
VO1		3	1			4
VS6		5	6	4		15
VU		7	9	2		18
ZB2			1			1
ZC4		1	1	1		3
ZL0			1	1		2
ZL1	15	22	10	4	1	52
ZL2	6	15	8	1		30
ZL3	1	4	2			7
ZL4		1				1
ZL7	1					1
3D6		1				1
4S			3			3
5B4				1		1
6Y		1	1			
8P		1				1
9J	1		2			5
9M2	1		2			3
9V		1	2	1	1	5
AREA	21	31	31	19	5	
SFX	103	257	312	139	9	

There were 39 call areas worked.

The Golden Anniversary of the Commonwealth Contest proved to attract more entrants than ever before, some 150, and although band conditions were only fair, some very respectable scores were made. It is remarkable and a tribute to the contest that contacts being made between station over 50 years ago are still being made today, and the strength of friendship which has resulted and continues to form between participants is surely an essential part of our hobby. The contest also tests an amateur's station and operating skill to the maximum, demanding a good knowledge of band conditions at this time of year and the ingenuity to construct even better antennas to weedle out those faint, but crucial signals from the noise. The Commonwealth is a dignified contest where manners and experimentation are set against a competitive spirit.

THE RESULT

The winner of the Golden Jubilee contest is Lee Sawkins VE7CC, making this his fifth outright victory in the past 10 years. Congratulations. Lee used a combination of TS820 and L4B driving an 80 metre inverted Vee, a 40 metre two-element Yagi at 105 feet, on 20 a five-element KLM at 100 feet, 15, four-element Yagi at 85 feet. He was closely challenged by John Sluymer VE6OU/3. who made over 100 extra QSOs but just lost on bonus points. John used the following (if you can imagine this, you are doing well!). A TS940S and MLA2500 feeding; phased inverted Vees at 130 feet for 80 metres, three-element Yagi at 150 feet for 40 metres, six-element Yagi at 150 feet on 20 metres, four-element Yagi at 1650 feet for 15, CL36 and 402BA at 75 feet.

Nigel Hoyow 6Y5HN, drops to third place this year, but I have a feeling we have not heard the last of Nigel if his new QTH is as promising as it sounds. Doug Renwick VE5RA, made a gallant effort from Barbados as 8P9HG, and must have felt he was in with a chance up until the last few hours when things went quiet from there. Perhaps the biggest improvement has come from Kevin Smith VK6LW, who finished in fourth place. This was a clever piece of operation and Kevin made good use of all bands to pick up over 130 bonus points. Could we have a future VK6 winner here?

I am beginning to lose count of the number of time Al Slater has won the Col Thomas Rose Bowl. He wins it yet again, but not after a severe testing from first time entrant, Ron Stone GW3YDX. As Ron said on his entry, "had the contest ended at 0900 I probably would have beaten Ron. However, I am sure he has done it again on bonuses". Only just Ron, 161 to your 158 — not much of a difference after 24 hours!

AWARD WINNERS

Senior Rose Bowl — Lee Sawkins VE7CC
Junior Rose Bowl — John Sluymer VE6OU/3
Col Thomas Rose Bowl — Al Slater G3FXB
Receiving Rose Bowl — C Bradbury BRS 1066.

SINGLE BAND WINNERS — UK
3.5 MHz — G3KSK
7 MHz — G4ODV
14 MHz — G3RZP

SINGLE BAND WINNERS — Overseas
3.5 MHz — VK7ZO
7 MHz — VK4BRF
14 MHz — ZL3AGI
21 MHz — VU2UR

SPECIAL AWARDS
The Special Awards given to celebrate the Golden Anniversary have been allocated as follows:
Special Award — Dud Charman G6CJ
Overseas Winner — Lee Sawkins VE7CC
UK Winner — Al Slater G3FXB
UK Receiving Winner — C Bradbury BRS 1066

The Committee discussed at length who should receive the award giving the most to the contest throughout its history. There were many candidates — some of whom are mentioned later, but it was decided unanimously to present the award to Dud Charman G6CJ, for the length of time he has participated in the contest, and for the skill in operating he has shown over the years. Dud entered his first BERU contest in 1936, and has present ever since. Many of the Old Timers will remember the time when Dud led the list of entrants in 1952, but could not accept the Senior Rose Bowl because he was chairman of the HFCC at that time. This reflects his ability in operating since this feat has only been accomplished by two other UK amateurs in the history of the event. Many thanks Dud, for all you have done for the Commonwealth Contest and I am sure I speak for all amateurs when I wish you good luck for the future.

The Committee also recognised the outstanding contribution made by Mal Geddes G2SO/Z23JO, Snow Campbell VK3MR, Frank Cooper G2QT, John Tutton VK3ZC, and Victor Williams VE3KE/VE7UZ. In order to thank them for their participation, they will be receiving a special certificate for their efforts over the years. Thank you gentlemen.

ACTIVITY AND CONDITIONS
Compared to last year the biggest improvement was in the number of different call areas active. Although conditions were not markedly different this increase in call areas makes the contest much more enjoyable and interesting. This year a total of 60 areas were worked at one time or other and again it is the UK amateurs who seem to be in the best location for working the majority of areas, with G3FXB, contacting 41 out of the 60. With increased publicity and improved conditions (!) there could be over 70 call areas active during next year's contest.

80 metres held out to the east coast of VE and ZL, but propagation to VK and Africa was disappointing. Many stations were pleased to work VU2ALM who provided the only signals from Asia, whilst G3MXJ, G4FAM, G3PEK, G4BUD, GD3AHV and GB5CC were the only ones to contact 9J2BO on this band. North America is the place to be for 80 metres, with 27 call areas being worked and the only absence being Asian signals from that part of the world. No doubt strong east European signals wipe out Commonwealth signals for the Asian stations on 80 and 40 metres, but it made a pleasant change to have a good level of activity from them on the HF bands.

40 metres would certainly supply more if it opened to VE4, 5, 6, and 7 from the UK. Signals to Oceania are always good at this time of the year and quite often more reliable than 20 metres.

20 metres was again the 'bread and butter' band supplying 54 percent of the total number of QSOs. The biggest change in propagation is shown on 15 metres where there was a substantial opening to VK/ZL and also VE which did not happen last year. Perhaps this sheds some light on the change in propagation due to our shift through the sun spot cycle. It was a shame for the Asian stations that 15 metres failed to open to VE, otherwise they would have had a share of all the activity present on that band.

10 metres has still to show any appreciable sign of improvement. If it had not been for the presence of GB5CC and Z23JO, there would have been no contacts made from the UK. Elsewhere there was minimal use of the band with most traffic taking place between VK2/3 and ZL1/2. Surely things can only improve.

COMMENTS
"I hope you have more VU entries this year" — VU2UR.
"Where were all the VKs this year?" — G3PEK.
"I was dog-tired when the contest started. I'd been up since about 0500 and had to put the antenna back up on the garage roof (Not so easy at nearly 66 years of age with only a YF to assist!)" — VK2AQF.
"Good to hear old 'G' friends again" — VK5AGX.
"Receiving the 10 metre certificate in 1984 was one of my biggest thrills. As I recall, I made only five QSOs but I listened for quite a long time and suddenly the band opened marginally to the UK, and then Africa. Nothing heard on 10 metre this year. Perhaps next year? ? ?" — VE2AEJ/3.
"If you could arrange to have GB5CC within ground wave range for me next time along with an operator I know who will suggest we QSY to 28 MHz I will be greatly obliged!" — G3JYP.
"I was running two watts to a dipole so a lot of my 599 reports must be suspect, but I enjoyed being sought after." — ZL0AKB (He didn't manage to work any Gs! ! !).
"Propagation was very poor considering I had to fight to get the VK call signs which normally are booming through most mornings." — ZC4AP.
"Piece of wire in roof-space of bungalow. About 11'6" above ground. What Pat Hawker calls an AOG (Act of God) aerial." — GW3HCL.
"I came back to England for the weekend in order to take part so I think it cost me about £2 per QSO in fares!" — G3TMA.
"Score only slightly higher than 25 years ago . . . Inverted Vee, sloper end buried in eight foot of snow. Power winch and crank-over winch also under snow. Rotator jammed and beam pointed north, finals in amplifier gone soft." — VO1AW.
"There were hundreds of ZL/VK field day stations. but not on the BERU contest. Is there anything wrong between England and New Zealand?" — VK2BQQ.
"Although I cannot claim to have taken part in all 50 contests, I have been in quite a number, my log showing the first being in 1932, which must have been one of the earliest BERU contests." — VK7CH. (It was the second, and Mr Harrison came sixth in Region 12 of the BERU).
"Another BERU contest over and I am another year older having taken part in many of the contests in my 59 years on the air." — VK3FC.
"Greetings and thanks for another interesting contest. Next year 21 MHz should be wide open, and maybe 28 MHz?" — VK8HA.
"It was pleasant to say hello again to so many of the participants who make this an annual event." — VE3IY.
"Very pleased to have 40 metres open to VK/ZL shortly before the test ended." — VE3KZ.
"Now aged 71 and licensed nearly 53 years. Have been in quite a few BERU tests. Ex VE2WA, VO6U, WE4SO." — VE3ST.
"I am concerned at the number of stations who confused my call with that of Russ VK4XA. This is usually a clear indication that the received strength is not in accordance with the report given." — VK4XW.
"Will I be last this year?" — VK7ZO.
"My first BERU contest — and on the 36th anniversary of receiving my licence too. Now I know what I have been missing!" — G3HJF.
"Conditions interesting, a pleasure to participate." — G3IGW.
"Had no QSOs between 0400 and 0600 UTC. Kept myself awake by reading the RS catalogue." — G3JKS.
"Level of activity terrific. Worked a few new ones, ZD8CW on 80 metres, VS6DO on 40 metres, also located 5A0A on 15 metres whilst tuning." — G4OBK.
"Lots of fairly unusual places seemed to think they had joined the Commonwealth. Prize goes to K1 heard calling CQ BERU. Perhaps he hasn't heard about the events of 1776!" — G3WRR.
"Hope to have a quad up at 120 feet for next year, also definitely going to invest in a paddle after pounding away for so long on a straight key." — 5B4UK.
"I find this the best contest in the whole year of contests. Most of the others are a waste of time." — Z23JO.
"Miss Rusty G5WP, especially for the 3.5 MHz contacts." — VE7UZ.

The RSGB would like to thank everyone who has helped to publicise this event. Hopefully, there will not be a clash between the Commonwealth and VK/ZL Field Day for next year. We hope to run GB5CC again as this seems to have had only positive comments from entrants, see you on March 12-13, 1988. Finally, thanks to those who sent in check logs:
VK3VQ, GW3HCL, G3VDL, VK3KF, G4HMD, G4CP, VS6UO, ZL0AKB, GM3ITN, G2QY, G3WP, VE3AOT, GI5TK, and again John Tutton VK3ZC, for help with publicity in Australia.

THE GB5CC STORY
Don Beattie G3OZF, and Alan Gray G4DJX, made the journey to Wokingham for the weekend to operate GB5CC from the QTH of Ian Sheppard G4LJF. If you think you have a decent station take a look at this one — a four element triband beam for 20, 15 and 10 metres, a three element 40 metre beam, and five 80 metre slopers all over 100 feet high.

We arrived at 10 am, began preparing the shack, and by 11/30 am put out a few tentative CQs. As this was to be the first ever use of a GB5 prefix, we were expecting a certain amount of interest, but fortunately this was minimal and we were able to concentrate on working Commonwealth station once the contest began. With the favourable site and call sign we were hoping to prove that the contest can be won again from the UK, and, indeed if you include the 300-odd UK QSOs also made, this was the case.

However, although we obviously lost out on some of the other Commonwealth call areas due to UK traffic, there is still a mighty difference between the top UK entrant, Al Slater, and the overall winner Lee Sawkins. Maybe next year. . .?

We tried to make the best use of all bands, making scheds and QSYing where appropriate. The big disappointment to us was 10 metres. It was only in the dying minutes of the contest that we got through to Mal Geddes Z23JO. Attempts with ZB2EO, ZC4ZP, and 9J2BO gave no results. Things may be different next year when openings to VE from the UK may occur. The operation by Commonwealth stations was exemplary and it is a pity other operators failed to take notice of this. One station, who would only give his call as UA1AA, continually jammed the station repeating that we were on a DX frequency. If he had taken the trouble to listen to the operation he would have heard the DX and us working it. It is a shame that a perfect example of communication between amateurs throughout the world should be spoiled by a few. This apart, we finished the weekend with the satisfaction of knowing that we had enjoyed ourselves tremendously, and had given a reasonable opportunity for other stations to work GB5CC.

Alan Gray G4DJX

GB5CC RESULTS

BAND	QSO	BONUS	AREA	POINTS
3.5	102	24	13	990
7	174	50	26	1870
14	186	57	27	2070
21	72	24	16	840
28	18	4	2	170
Total	552	159	38	5940

Contributed and compiled by John Tutton VK3ZC

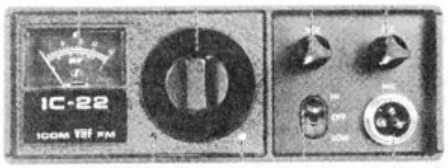
Know your Second-hand Equipment

ICOM HF & VHF TRANSCEIVERS

Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley, Vic. 3150

Some of the early Icom and Inoue equipment was covered in the March 1986 issue of AR. It is therefore high time to look at some others from this popular series. The sales of Icom equipment in Australia really progressed when Vicom opened in Melbourne during late-1974. They distributed Icom products and also sold Yaesu and Kenwood for a time. Vicom also introduced the Uniden 2020 to Australian amateurs.

However, it is probably fair to say, the one single rig that put both Icom and Vicom "on the map" was the IC-22, a two-metre FM series. Perhaps one reason for this was that Vicom, at that time, were prepared to carry large stocks of crystals for all of the popular two-metre frequencies. Most of the other distributors were reluctant to do this and, in consequence, lost sales.



ICOM IC-22

The IC-22 was a two-metre transceiver with 10-watt output and 22 channel capability. As mentioned above it was crystal locked and required two crystals for each channel, one for transmit and one for receive. Whilst the external appearance was identical to the IC-20 (see March 1986, AR), the internal construction was completely changed. The module construction of the IC-20 was simplified to two large circuit boards — one for the transmitter and receiver components and one to take the crystals and their associated trimmers. They were normally sold fitted with three channels to the users requirements.

Price new in 1975 was $198 and secondhand value today would be about $100, assuming it is fitted with five or six useful channels.

ICOM IC-22A

Released early in 1975, the 22A was a cosmetically improved version of the IC-22. Electronically it was identical to the 22 but featured a redesigned front panel with an easier to read channel-selector. Transmitter power output was again one or 10 watts. Overall performance of these sets was excellent and they also had a very good reliability record. Price when new in April 1975 was $210. Secondhand value today would be about $120.

ICOM IC-22S

Appearance was the same as the IC-22A and most of the essential specifications remained the same but there was one important change, no crystals were required. The 22S featured a PLL synthesiser and operating frequencies were programmed by inserting diodes into a matrix board. As with the earlier 22 and 22A, there were 22 channels available and, as sold, they were programmed for repeaters one to eight and simplex 40, 50 and 51. The remaining channels could then be programmed to the owners selection. Soon modifications became available to add an external switch box to enable any frequency to be immediately selected. It wasn't long before the 22S became the standard two-metre FM rig. It seemed that "everyone had one".

All went well for several years but then troubles began to appear. These were first attributed to dry solder joints, mainly in pins connecting the double-sided circuit boards. Later other troubles appeared — so much so that the 22S now has a dubious reputation on the secondhand market.

Price when new in 1977 was $269. Secondhand value today would be about $140, but ensure it is working. Check all programmed channels for transmit and receive operation in duplex A, B and simplex modes. If this is okay — good luck. . .

ICOM IC-245

Perhaps the best way to describe the 245 is to say that it was an IC-22S with a digital VFO and LED digital frequency readout. It sold at an up-market price of $479 and, as such, is a rather rare item today.

The thing that really put the 245 into a class by itself was the optional SSB adaptor. The photograph shows the 245 with the SSB adaptor attached underneath.

Tuning rate on FM was in five kilohertz steps and with SSB selected, 100 kHz steps. Power output on transmit was 10 watts with no provision for low power selection. In later life, these transceivers also proved to be rather troublesome. Price in 1977 as mentioned above was $479, but the SSB adaptor was an option at an extra $129. Secondhand value today for both units combined would be about $250.

ICOM IC-211

The IC-211 was Icom's first fully self-contained multi-mode two-metre transceiver. It's features included — built in AC power supply or operation direct from 12 volts DC, operation in FM, SSB and CW modes, two VFOs that would track to provide a repeater offset for FM operation, separate S-meter and centre tune discriminator meter, effective noise blanker and selectable AGC for SSB. Tuning rates of five kilohertz for FM and 100 Hz for SSB, plus a seven digit LED frequency readout. These transceivers were capable of excellent performance and were very smooth to operate. Transmitter output was 10 watts FM and CW and 10 to 15 watts PEP for SSB. As long as the AC or DC power was connected, the last operating frequency of the VFO was remembered, however there were no additional memories. Later a digital remote control unit became available which did have a limited memory capability. This unit, known as the RM-2 or RM-3, contained its own digital frequency readout and a keyboard for frequency selection. The RM-2/3 was also usable with the HF SSB transceiver, model 701, which will be featured next.

The IC-211 was released in early 1977 and the price was $785. Price of the optional RM-2 or 3 remote controller is not known. It should be noted that the IC-211 also suffered from its fair share of troubles, also. These often showed themselves as jumps in frequency and the two VFOs reverting to the same frequency during split-operation.

Secondhand value today for an unmarked working IC-211 would be about $350. The remote controller would be about $100.

ICOM IC-701 HF TRANSCEIVER

Released during early 1978, the 701 was the first Icom HF transceiver produced since the original IC-700 of 1969. As was expected, the 701 was technically very advanced and, in fact, set the scene for our present-day transceivers. It was, like the VHF IC-211, fully synthesised with two VFOs and was fully solid-state including the final stage, but now with 100 watts output and requiring a separate 12 volt DC supply.

Initially, it came complete with the 701PS power supply and a desk microphone. Later both the power supply and desk microphone became options. Some other interesting features on the 701 included — motor driven band switch, hang AGC system, an RIT that switched off as soon as the main tuning dial was moved, two speed tuning of 100 Hz and 1 kHz steps.

However, one of the problems was that the VFO frequency reverted to the band edge when the power was switched off and then on again. Unlike the IC-211, there was no memory of the last in-use frequency. Despite this, the 701 was a very pleasant unit to use and it produced very acceptable audio quality on both transmit and receive. Early examples were very prone to trouble but most were repaired under warranty. Towards the end of their production run they became mush better as Icom obviously tightened their quality control. A secondhand unit bought today should be reasonably reliable. The most common problem today is the failure of the final transistors. They are also prone to intermittent connection in the motor driven band changing relay system. This can often be temporarily cured by rotating the band selector when set to the 'external' position.

Price of the IC-701 new in 1978 was $1575 complete with AC power supply. Secondhand value for the combination would be about $575. Note too that the original IC-PS701 power supply was not a regulated supply and delivered about 18 volts on no or low load. While the 701 transceiver was designed to cope with this, the supply is not suitable for use with other equipment.

Next month we will look at some more equipment from Icom.

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AR Showcase

SHARP EXPANDS POPULAR TWINCAM RANGE

Sharp, market leaders in portable audio products, have released three new Twincam stereo radio cassette recorders which doubles their selection.

The new cassette recorders are popular due to their easy operation, high performance and compact design.

The key to this latest success is the innovative Twincam mechanism, which stacks one tape behind the other with a single motor drive operation, making speed deviations and revolution irregularities with recording a thing of the past.

The Twincam back-to-back design is also more space efficient, allowing Sharp to incorporate more powerful amplifiers and bigger speakers, while still keeping the portable units surprisingly compact.

Features on Sharp's Budget Twincam (WQ-T232), which will appeal to those wanting big (50 watt PMPO) power at a competitive price, include two-way four speaker system, three-band graphic equaliser for sound tailoring, CD/Line in, bass reflex ducts, for good base response, continuous playback and improved editing functions for ease of operation. The WO-T232, is available in red, khaki green, black and designer gray.

Customers requiring extra power (60 watt PMPO), and a mid-range price should like the new Spectrum Twincam model, this unit includes a five band spectrum analyser, and convenient auto program-search system (APSS), which is very handy for searching out the start of the next music selection.

The third new portable, the Auto Reverse Twincam (WQ-T483), features the exclusive Twin Mechanism with a feather-touch full logic twin auto-reverse, 70 watts power (PMPO), four band graphic equaliser, auto-reverse dubbing, and a four-band radio, as well as the standard features included in other Twincam models. APSS is also available on both tapes for added convenience.

The new Twincam models, for use both indoors and outdoors, are designed to look as great as they sound and provide first-class entertainment at a reasonable price.

—Contributed for Sharp Corporation of Australia by Jordan Hardingham Pty Ltd

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NATIONAL LAND MOBILE EXPO 88

The National Land Mobile Expo 88 has been selected by the US Department of Commerce for its prestigious foreign buyers program. The Expo is one of only 18 US trade shows selected by the Department of Commerce for the program, joining such major conventions as Comdex and Wescon. The Expo will be held in Las Vegas from April 20-22, 1988.

The foreign buyers program is designed to attract overseas attendees to US trade shows and to assist exhibiting companies in transacting business with foreign firms. As part of the program, the US Foreign and Commercial Service Marketing Development Division will provide a number of services to exhibitors at the Expo. The Division will print an export interest directory that contains information about exhibiting US companies including name and address, products and services, and international marketing objectives. The Division will also promote the show with listings and announcements in domestic and international publications.

At the Expo, the US Foreign and Commercial Service will manage an international business centre to assist with registration for foreign attendees and arrange meetings between overseas buyers and exhibitors. Export counselling will also be provided and the Division will encourage local financial institutions to participate and offer export financial advice.

The Expo is sponsored by Communications, Global Communications and Cellular Marketing.

The National Land Mobile Expo is in its 12th year and is considered the leading trade show for the mobile communications industry, and includes mobile and portable radios, microwave, paging and cellular equipment.

For further information contact Bert Engelhardt, Commercial Consul, Hyde Park Tower, 38th Floor, Park and Elizabeth Streets, Sydney, NSW. 2000. Phone (02) 261 9200.

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THE PUZZLER'S GUIDE

Readers who like *Morsewords* will be interested to know that *The Puzzler's Guide*, a new book by Audrey Ryan, is now available in bookshops and newsagents for $7.95.

This is a great book for people who love to solve word puzzles but is also for those who would like to, but don't know where to begin.

The Puzzler's Guide takes readers through the basic steps and the more complex rules for solving popular puzzles like cross reference, word search, straight and cryptic crosswords, diagramless puzzles and more — even the new logic problems.

There are step-by-step worked puzzles, other samples to try and a section on 'educated guessing' to remind you of the rules of English usage. *The Puzzler's Guide* makes a great present for a friend or for yourself, to make the most of those leisure hours.

The Puzzler's Guide is published by Australian Puzzler Press

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REMEMBER

When inquiring about products published in AR always mention where you read of the product.

Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

Well, here I am again after quite a long absence caused by a combination of the bitterly cold winter we have been experiencing (who said Sunraysia had a warm climate), and some medical problems which were accentuated by the cold weather. (The Osteo-arthritis in my right knee has felt as though someone has hit the knee with a heavy mallet!).

Hopefully, the coming summer will treat me more kindly!

I was very pleased to see that my earlier articles has brought a response from another amateur who was probably on Morotai Island around the same time as myself. It is a pity we did not meet, but I was pleased to see his photographs published in AR. I regret that, due to the scarcity of film plus the restrictions on photography during wartime, I was unable to take more than about half-a-dozen photographs during my stay in the Northern Territory and Morotai. Unfortunately, I no longer have the few that I took either.

Looking at the photographs published my memories of the types of equipment that was then in use came flooding back and I wonder if any other amateurs who were either in the Northern Territory or Morotai at that time have any photographs.

Writing about the wartime years, about 20 years ago I was given a book which may be of interest to people who served in the RAAF, particularly those who served at Mudbury (near Hull) in England. RAAF pilots took-off from here on raids across the English Channel into enemy territory. The book is called *Manual of Air Navigation, Volume 1,* and is the 1941 edition reprinted in May 1943. It is marked "For Official Use" and contains an enormous amount of detail with maps showing targets used by the airmen whose job it was to smash the enemy lines. It also contains logs, signed by pilots and navigators who took part and details of the weather encountered whilst en route to the targets. The word "Helder" features on many of these documents as apparently it was a type of reporting point.

Following is an extract from a document dated April 1, 1941, and signed by Ivor Brain P/O navigator and second pilot Sgt Steers. Crew listed were Sgt Shooter, Sgt Sparkes, P/O Turret. This is the weather forecast which they mention:

"Depression centred over Denmark. Should move E. A secondary off NW coast. Moving SE. Occlusion probably E of Hanover 0000 GMT. Some medium cloud over whole route. Heavy rain probable on return to Mudbury. Vis 5m except showers. Ice at 6000'. Pressure 1002 mb. Aerodrome level."

The very large map accompanying this document shows tracks right from Mudbury, one going to Emden, and another through Helder to areas near Onsbruck and Minden. There are also many navigation symbols which are Greek to me. There are also arrows showing the direction of stars like Polaris and Vega. This map, one of many, is marked "Drawn and Heliographed at OS 1940" whatever that may mean!

Despite its age, this book is still in reasonably good-shape and, whilst I do not want to part with it because of its obvious historical value, I would be willing to sent photocopies of any of the maps or parts of documents to anyone interested.

As there was a paper shortage during wartime, there are many alterations made to some of the material in red ink, and sections needing revision were pasted over the original material. Although intended for use by RAAF personnel in England, the book bears the marking "Reprinted by Authority of the Air Board: A H Pettifer, Acting Govt Printer".

The book also has illustrations of equipment such as the P6 Compass, P6 Grid Ring, P6 Bowl, P6 Container and Lid Ring, the Astro Compass Mark II, the Master Unit of the DR Compass, the Pilot's Repeater, the Navigator's Repeater, the Control Panel, and many other gadgets. Following is an extract about Aircraft Radio:

"Means for reducing precipitation static —

"1. Radio static on aircraft in the form of a continual roar or squeal of changing pitch is called by various names:

"Precipitation Static, Rain and Snow Static or Corona Static.

"It is caused by electrical discharges in clouds and is distinct in cause and behaviour from the thunderstorm static which causes a clicking or brief crashing sound in the radio when lightning flashes, somewhere nearby, followed by periods of clear reception of the radio signal. Past experience has shown some ways to reduce corona static and are given in paragraph 2.

"2. (a) Instrument flight should be avoided when possible where the temperature is between minus 4 deg C and plus 1 deg C. Corona static usually occurs in clouds or rain or snow where the temperature is near freezing. It is particularly advisable to avoid flying parallel with a cold front in this temperature range.

"2. (b) As corona forms more readily at low pressures than at high, slow motor speeds are advisable since less pressure reduction will be encountered at the propeller tips. The faster the motor speed the greater is the reduction in pressure encountered at the propeller tips. In the vicinity of charged clouds, it is usually on the propeller tips that the corona first begins. It is visible as a faint bluish-white "Saint Elmo's Fire" at night, but cannot be seen in the daylight. Corona forms more easily at low pressures than at high, and slow motor speeds result in more pressure near the propeller tips than high motor speed.

"2. (c) The compass receiver using the loop antenna is the best to use in corona static conditions. Corona anywhere on the airplane produces a radio wave nearby which is most intense in its electric component, whereas the loop antenna is responsive only to a magnet component.

"2 (d) The trailing antenna can be grounded and then unreeled to 50 or 100 feet. It is important to ground the antenna prior to unreeling to prevent electric shocks to persons near the antenna and inside the cabin. The trailing antenna terminal on the antenna selector switch should be grounded with a piece of wire or some metal object. The trailing antenna will help in some cases.

"2 (e) If the airplane is provided with an anti-static discharge wire, it should be released. These have been found to reduce corona static in some cases."

And, so the *Manual of Air Navigation Volume 1* goes on.

Re Saint Elmo's Fire, isn't that the expression that the crews of the sailing ships of old used to say was an eerie light on a very dark night high up on the rigging as they sailed around the world all those hundreds of years ago? I wonder if the sailors on the re-enactment fleet will see the same Saint Elmo's Fire as crews of the First Fleet probably saw!

* Saint Elmo's Fire, electrical appearances sometimes seen about masts of ships, steeples, etc.
—Derivation from *Collins National Dictionary*

NEW ANTENNAS FOR FRANK

A few days prior to writing this article (September 8), I was chatting with Peter VK2MUG, whose government position takes him to various parts of outback New South Wales. Peter's home QTH is Coleambally,. but I have spoken to him on 80 metres when he has been on various outback station homesteads, usually in the early hours of the morning when we have been some of the few amateurs on-air at the time.

My last contact was the one referred to above, when he was in Broken Hill, and at the home of Frank VK2ZI. Peter was operating Frank's equipment as Frank had retired for the evening. Peter said, "Frank wants to know about that interview you did with him last February. He has been checking AR each month and is disappointed at not seeing it."

The photograph shows Joe VK2BJX, in the studio of Radio Mildura 3MA, during the recording of one of his fortnightly broadcasts.

—Photograph courtesy John Morris VK3NRJ

The interview referred to was a tape recording, taken with Frank's permission, from an 80 metre QSO about 10 pm on February 28, 1987. Frank told me about some special antennas that had been erected for him by Graeme VK2ZZV, of Cardiff. The antennas were erected at Broken Hill to assist Frank hear the OSCAR 10 satellite. The recording was eventually transcribed from the tape into a note book awaiting the time when I would write it into an article.

Then I was stricken by some of my medical problems, then the cold weather and a miserable winter. I still had the notes, but on rereading them some of my writing was a little illegible so it was necessary to transcribe the tape again. Finally here is a report of my interview with Frank.

Frank was telling me that VK2ZZV had decided to make an Australian version of a Japanese satellite antenna, and was now a distributor for the antennas. The first shipment was released on January 21, but before they were released Frank arranged a test with Graeme VK5AGR. Graeme took measurements against the strength of the beacon at mean anomaly 55 on OSCAR 10 and on this reading Frank's signals were a half to one S-point below the beacon.

When VK2ZZV arrived the following week to install Frank's antennas, another reading was taken by Graeme VK5AGR, under the same conditions and Frank's signals had gone up to two and a half S-points above the beacon giving him a gain of three S-points using the new antennas.

At that time — back in February — Frank's antennas were the only ones in existence (being the prototype), but the full production run was expected early March. Several antennas had already been ordered from Graeme VK2ZZV's Cardiff Antenna Farm. Frank went on to say they were fantastic antennas.

Frank said: "In past years, I have worked a tremendous number of course, Joe, and over a period of the last three years I was averaging Q5 with an average strength of about 3, 4, and 5 — extending right across the world. I have quite a stack of QSL cards from OSCAR 10 alone which cover practically all the European countries and most American areas — everywhere in fact. But the difference now is that, with these new antennas, the reports that I am getting back are 5, 6, 7 and 8, with two or three extra new countries as well.

"The antennas consist of the 70 centimetre uplink — 40 element crossed Yagi on the one boom, and the downlink is a 24 element crossed Yagi. Of course, this is considerably larger than my original antenna.

"So, that's the story" said Frank, "the beauty of them is that the construction is so much simpler, there is no harness required because the relays for switching them from clockwise to anti-clockwise are built into the antennas. So you can understand just how efficient they are.

"This information is going to be published in the AMSAT Newsletter which will be out early this coming week, so there is bound to be some comments on the antennas in the newsletter!"

Frank also has photographs of his new antennas.

He is very grateful to the two Graemes, VK2ZZV who ventured all the way from Newcastle to Broken Hill to install the antennas for him, and to VK5AGR for helping with the tests.

My apologies to Frank who has been waiting for this article to appear — but better late than never!

Regards to all from Joe VK2BJX

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Thought for the Month

A committee is a body that keeps minutes and wastes hours.

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

ALARA CONTEST

It hasn't taken long for November to get here, and how the year has flown!

November is an important month for ALARA, because our contest is always held in this month.

This year *Saturday, November 14,* 0001 to 2359 UTC, is our big day, and we look forward to plenty of activity, and hopefully good propagation, which will allow the participation of some of our DX members.

We have been very pleased, in past years, to have the support of so many OMs, and very much hope they will join us again this year.

This is an excellent opportunity for anyone working towards the ALARA Award, or upgrading their present award, to gain some valuable points. Contacts made during the contest count towards our award, but not those made during official nets.

This year will see the awarding of the Five Year Trophy, which will be presented to the licensed YL operator (not necessarily Australian) with the highest aggregate score over the last five years. I hope to be able to give you the last four years aggregate shortly.

So, leave the dishes in the sink, the vacuum cleaner in the cupboard, prevail upon the OM to fix himself a sandwich, and come and join us on November 14. Hope to hear you then!

FLORENCE McKENZIE MEMORIAL TROPHY

Due to difficulties in finding a suitable place to display the *Florence McKenzie Memorial Trophy* in the VK3 Division, an offer has been accepted from the VK5 Division to house the trophy permanently. Out thanks to the VK5 Division, and also to the VK3 Division for their assistance.

This lovely trophy, awarded annually to the novice YL (not necessarily an ALARA member) with the highest CW score in the ALARA Contest, was won last year by Bobbie VK2PXS.

We hope for plenty of CW activity this year also, so get those keys dusted down and ready for use! We will be looking for novice YLs, in particular.

ALARA—MEET

Our second get-together (ALARA-Meet) was held in Adelaide on September 26-27. I hope to be able to give you a report on this next month.

AWARD PRESENTED TO VK3BIR

A presentation of an engraved award was recently made to Mavis VK3BIR, in appreciation of her efforts in support of ALARA in her various roles as State Representative, President, Vice-President, Treasurer and Editor of the Newsletter.

All members echo the sentiments in the letter that accompanied the award.

Congratulations Mavis, a worthy recipient.

(Bron VK3DYF)

ALARA COMMITTEE

The ALARA Committee is now complete, with Bobbie O'Hare VK2PXS, and Helene Dowd VK7HD, continuing as VK2 and VK7 State Representatives respectively.

JLRS 30th ANNIVERSARY

I hear that, in celebration of the 30th Anniversary of Japan Ladies' Radio Society, the new President, Chizue Yamada JA1EYL, on behalf of the Society, sent souvenir pendants to DX members. The pendant has, on the front, "JLRS 30th" and on the reverse the call sign of the recipient. A really lovely thought, and much appreciated by the YLs who received one.

(Bron VK3YDF)

Bron says the pendants are gold, and about the size of the ingots worn these days. Certainly a novel and charming idea. Several Australian YLs were delighted to receive these pendants.

NEW/OLD CALL SIGN

Congratulations are due to Audrey Gover, now VK4NAD. This call sign was held by her late husband Alf (May AR, page 62), and Audrey will now be able to carry on his call sign.

Audrey is mainly a CW operator and we hope we will hear from her during the contest.

How about trying for the Florence McKenzie Memorial Trophy, Audrey!

80 METRE ALARA NET

Our 80 metre net on Monday nights still proves popular.

It was a pleasure, on Monday recently, to be joined by VK3KMK with the 1st Mooroolbark Girl Guide Company, and to speak to some of the girls. Future YL operators, maybe?

BITS AND PIECES

Phyl, formerly VK4BPL, is now VK4CPL. The mixup occurred when it was discovered that VK4BPL belonged to someone else.

All hustle and bustle at the QTH of Bev VK6DE and Brian VK6AI recently when their daughter was married. We hope everything went smoothly, Bev.

Alexander, son of Liz VK3PSG, is now VK3MAR. I am sure he will make good use of the call sign he recently gained.

The Queensland YL Net operates on Tuesday evenings on 3.570 MHz at 0930 UTC, 7.30 pm local time. It is run by Josie VK4VG.

ALARA AWARD

Certificates have been issued to:

129	10.07.87	Marge Weller ZS2OB
130	22.07.87	Samuel Torpe FK8DD
131	18.08.87	Leonard Mendel K5OVC

It is good to see DX stations taking an interest in acquiring our award. I am sure they are not disappointed with it.

NEW MEMBERS

A welcome is extended to new members:
Patricia VK3PRV
Karen KA5WXE
Catherine KA1OKF

Great to have you in ALARA.
For this month

—73/33, Joy VK2EBX

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RADIODES

BASIC ELECTRONICS[3]

Resonance is not so simple,
When we try to understand.
But we cannot just ignore it —
Or dismiss it from the land.
For, without a resonant circuit —
Messages would go by hand.
Think of it — there'd be no wireless.
Wirelessless then we'd be.
We wouldn't know 2π fL,
Or one above 2π fB.
You couldn't buy traps for your dipole —
Or a TA33!

So let's resolve we'll one remember,
Of the numerous formulae.
We think it's of prime import,
To get the resonant frequency.
Hertz, please note, is *one* above —
2π root LC!

—"Hambard" (Originally printed in the Nigerian ARS Newsletter 1970s)

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

AWARDS ISSUED IN AUGUST

DXCC

PHONE
357 Peter Forbes VK3QI

CW
130 Peter Forbes VK3QI

OPEN
237 Peter Forbes VK3QI

DXCC UPDATES IN AUGUST

VK2BQS	171 open	163 phone
	102 RTTY	
VK2DTH	300/301 phone	
VK3AWY	306/310 phone	
VK3OT	300/304 phone	303/307 open
VK3YJ	301/302 phone	
VK4AK	313 phone	315 open
VK4BG	283/294 phone	290/304 open
VK4RF	296/320 CW	
VK5LC	267/278 phone	
VK6NE	307/317 phone	

ROYAL SOCIETY OF GREAT BRITAIN CERTIFICATES AND AWARDS

HF CERTIFICATES AND AWARDS: General Rules

The following general rules and conditions apply to HF certificates and awards issued by the Radio Society of Great Britain and should be read in conjunction with the conditions which govern the award of the individual certificates.

APPLICANT ELIGIBILITY
Overseas claimants need not be members of the RSGB but, where they are, they should enclose proof of membership such as a recent address label from *Radio Communication*.

Claimants may be either licensed radio amateurs or shortwave listeners. All certificates, but not special plaques or cups, are available on a "heard" basis to listeners.

CLAIM ELIGIBILITY
Each claim from overseas must be accompanied by all cards in the case of those categories of award attracting a plaque of cup. In other cases a statement from the applicant's national society or a statement by two officials of a local society affiliated to the national society that the necessary cards have been checked will be accepted, except that the HF Awards Manager reserves the right to ask to see some or all of the cards. For IOTA claims special rules apply (see IOTA Directory).

Each claim from a non-member of the RSGB must be accompanied by a fee of £3.00 or 12 IRCs or US$4.00 per certificate or class of certificate. The fee for members is £1.50 or six IRCs or US$2.00. These fees will be revised from time to time. All applicants submitting cards for checking must include sufficient payment to cover their return. Cards will only be returned by air, or registered mail if adequate postage is sent with the claim. (For registered mail add four IRCs).

CONTACT ELIGIBILITY
All contacts must be made by the holder of the call sign, on bands below 30 MHz.

Contacts may be made from any location in the same DXCC country.

Except where otherwise indicated, credit will be given for confirmed contacts made on or after November 15, 1945.

Contacts with land mobile stations will be accepted, provided the exact location of each station at the time of contact is clearly stated on the evidence submitted.

By decision of the RSGB's HF Committee credit will not be given for contacts made on the 10, 18, and 24 MHz bands. This decision will be reviewed when the bands become freely available to licensed radio amateurs world-wide and restricted power limits are removed.

Credit will be given for contacts made entirely on a single mode of transmission or on a combination of modes. Certificate endorsements for single mode transmission and/or single band may be made on the submission of cards clearly confirming the mode or frequency of transmission, but the request must be made at the time of the submission. Credit will not be given for cross-mode or cross-band contacts.

DISQUALIFICATION
Any altered or forged confirmations submitted for credit may result in disqualification of the applicant from the RSGB's award program.

In the case of any dispute concerning a claim, the decision of the appropriate Awards Manager, in consultation if necessary with the HF Committee, shall be final.

DX LISTENERS' CENTURY AWARD (DXLCA)

This award may be claimed by any shortwave listener eligible under the General Rules who can produce evidence of having received signals from amateur radio stations located in at least 100 DXCC countries. Stickers are available for every 25 additional countries confirmed.

A five-band endorsement is available for hearing 100 countries on five-bands. The same countries do not have to be heard on each band.

COMMONWEALTH CENTURY CLUB (CCC)

This award may be claimed by any licensed radio amateur eligible under the General Rules who can produce evidence of having effected two-way communications, since January 1, 1984, with amateur radio stations in at least 100 Commonwealth call areas in the current list.

A handsome plaque with a plate detailing name, call sign, date and number of the award will be available to all recipients on payment of a contributory charge.

Additionally, in recognition of the magnitude of the achievement, any licensed amateur providing evidence of having effected two-way communication since January 1, 1984, with all the Commonwealth call areas on the list current at the time if application will be able to claim a suitably engraved cup (charge to be determined).

Lists of Century Club members will be published regularly in *Radio Communication* while recipients of the cup will be invited to submit shack photographs and a suitable write-up for inclusion in the journal.

FIVE-BAND COMMONWEALTH CENTURY CLUB (5BCCC)

This award, available in five classes, may be claimed by any licensed radio amateur under the General Rules who can produce evidence of having effected two-way communication. since November 15, 1945, with the requisite number of amateur radio stations located in the call areas listed, using all five-bands, 3.5, 7, 14, 21 and 28 MHz. Each station should be located in a different call area per band. The five classes are for contacts as follows:

5BCCC Supreme	— 500 stations
5BCCC Class 1	— 450 stations
5BCCC Class 2	— 400 stations, with a minimum of 50 on each band
5BCCC Class 3	— 300 stations, with a minimum of 40 on each band
5BCCC Class 4	— 200 stations, with a minimum of 30 on each band

Certificates will be issued to winners of all classes. Additionally, as in cases of the CCC, winners of the Class 1 award will be eligible to claim a handsome plaque suitably inscribed on payment of a contributory charge, while winners of the Supreme Award will be able to claim an engraved cup. The cost of this is £17.00 including postage and packaging and VAT.

Lists of the Supreme, Class 1 and 2 winners will be published regularly in *Radio Communication* with a suitable write-up on each Supreme award winner.

28 MHz COUNTIES AWARD

This award may be claimed by any licensed radio amateur eligible under the General Rules who can produce evidence of having effected two-way communication, since April 1, 1983, with amateur radio stations located in 40 counties/regions in the UK, Channel Islands and Isle of Man on the 28 MHz band. Stickers are available for 60 and all 77 counties/regions confirmed.

WORKED ITU ZONES (WITUZ)

This award may be claimed by any licensed radio amateur eligible under the General Rules who can produce evidence of having effected two-way communication, since January 1, 1984, with land based amateur radios stations located in at least 70 of the 75 broadcasting zones as defined by the International Telecommunications Union (ITU).

A handsome plaque detailing name, call sign, date and number of the award will be available to all recipients on payment of a contributory charge.

Additionally, in recognition of the magnitude of the achievement, any licensed amateur providing evidence of having effected two-way communication, since January 1, 1984, with all 75 ITU zones will be able to claim a suitably engraved cup (charge to be determined).

Lists of award winners will be published regularly in *Radio Communication*, while recipients of the cup will be invited to submit shack photographs and a suitable write-up for inclusion in the journal.

FIVE-BAND WORKED ITU ZONES (5BWITUZ)

This card, available in five classes, may be claimed by any licensed radio amateur under the General Rules who can produce evidence of having effected two-way communication, since November 15, 1945, with the requisite number of land based amateur radio stations located in the 75 ITU broadcasting zones, using all five bands, 3.5, 7, 14, 21 and 28 MHz. Each station should be located in a different ITU zone per band. The five classes are for contacts as follows:

5BWITUZ Supreme	— 350 stations
5BWITUZ Class 1	— 325 stations
5BWITUZ Class 2	— 300 stations, with a minimum of 50 on each band
5BWITUZ Class 3	— 250 stations, with a minimum of 40 on each band
5BWITUZ Class 4	— 200 stations, with a minimum of 30 on each band

Certificates will be issued to winners of all classes. Additionally, as in the case of the WITUZ, winners of the Class 1 award will be eligible to claim a handsome plaque suitably inscribed on payment of a contributory charge, while winners of the Supreme Award will be able to claim an engraved cup (charge to be determined).

Lists of the Supreme, Class 1 and 2 winners will be published regularly in *Radio Communication* with a suitable write-up on each Supreme award winner.

NOTES

In the case of the WITUZ and 5BWITUZ, confirmations need not bear the appropriate ITU zone number, but in order to count for credit they should give the location of the station in sufficient detail to place it clearly within one particular zone. Doubtful cases indicating possible overlap across two zones will not be given credit.

The HF Awards Manager will use, as his reference, the *Radio Amateurs Prefix Map of the World,* published by Radio Amateur Callbook Inc, Lake Bluff, Illinois, 60044, USA. In the case of countries which encompass two or more ITU zones, eg USA, USSR and Brazil, zonal boundaries will generally follow the longitude/latitude grid lines as shown in the map. In the few instances of discrepancy between map and the accompanying prefix/country list, the decision of the HF Awards Manager will be final.

The island of Minami Torishima (JD1) lies outside the 75 broadcasting zones. As a special feature of this award program, a confirmed contact with this island will be accepted for credit for one missing zone, and in the case of 5BWITUZ, for one missing zone per band.

IARU REGION 1 AWARD

This award, available in three classes, may be claimed by any licensed radio amateur eligible under the General RUles who can produce evidence of having effected two-way communication with amateur radio stations located in the requisite number of countries whose national societies are members of the Region 1 Division of the International Amateur Radio Union (IARU). The three classes are for contacts as follows:

Class 1	All member countries on the current list
Class 2	45 member countries
Class 3	30 member countries.

Members of IARU Region 1 are:

Algeria	Kenya
Andorra	Kuwait
Austria	Lebanon
Bahrain	Lesotho
Belgium	Liberia
Botswana	Luxembourg
Bulgaria	Malta
Cyprus	Mauritius
Czechoslovakia	Monaco
Denmark	Morocco
Djibouti	Netherlands
Faroes	Nigeria
Finland	Norway
France	Oman
Gabon	Poland
Gambia	Portugal
German Dem Rep	Rumania
German Fed Rep	San Marino
Ghana	Senegal
Gibraltar	Sierra Leone
Greece	South Africa
Hungary	Spain
Iceland	Sweden
Ireland	Switzerland
Israel	United Kingdom
Italy	USSR
Ivory Coast	Yugoslavia
Jordan	Zambia
	Zimbabwe

A special version of this award is available, in the same three classes, for confirmed contacts on the 28 MHz band since July 1, 1983.

ISLANDS ON THE AIR (IOTA)

The IOTA award program was created by Geoff Watts, a leading British shortwave listener, in the mid-1960s. In March 1985, it was at his request, taken over by the RSGB. By this date it had already become well established and highly regarded among amateurs world-wide.

In all, the IOTA award program consists of 15 separate awards. They may be claimed by any licensed radio amateur eligible under the General Rules who can produce evidence of having effected two-way communication, since December 1, 1964, with the requisite number of amateur radio station located on islands both world-wide and regional. Many of the islands are DXCC countries in their own right; others are not but, by meeting particular eligibility criteria, also count for credit. One of the great merits of IOTA is that it is an evolving program with new islands being added to the list when they are activated for the first time.

The following awards are available:

IOTA Africa	IOTA-AF
IOTA Arctic Islands	IOTA-AI
IOTA Antarctica	IOTA-AN
IOTA Asia	IOTA-AS
IOTA British Isles	IOTA-BI
IOTA Europe	IOTA-EU
IOTA North America	IOTA-NA
IOTA Oceania	IOTA-OC
IOTA South America	IOTA-SA
IOTA West Indies	IOTA-WI
IOTA World Diploma	IOTA-WW
IOTA Century Club Award	IOTA-CC-100
IOTA Century Club Award	IOTA-CC-200
IOTA Century Club Award	IOTA-CC-300
IOTA Century Club Award	IOTA-CC-400

A feature of the IOTA program is the quarterly Honour Roll appearing in the *RSGB DX News Sheet,* which encourages continual updating of claims.

The 14-page *Directory of Islands* lists all islands which count for IOTA award claims, which, in all cases, must be accompanied by QSL cards, should be addressed to the IOTA Awards Manager, Roger Balister G3KMA, La Quinta, Mimbridge, Chobham, Surrey, GU24 8AR, England. (Please note — applications for IOTA awards **do not** go to the HF Awards Manager.

APPLICATIONS FOR AWARDS

Cards should be enclosed in accordance with the requirements of the awards being claimed. Non-members of the RSGB should enclose £3.00, 12 IRCs or US$4.00 for each certificate or class of certificate applied for. Members should enclose £1.50, six IRCs or US$2.00 for each certificate or class of certificate applied for. Please ensure that each claim is accompanied by the name, call sign (if applicable) and full address of the applicant. Claims (except for IOTA) should be sent to the RSGB HF Awards Manager, Steve Emlyn-Jones GW4BKG, PO Box 20, Bridgend, Mid Glamorgan, CF35, United Kingdom.

Contributed by David Evans G3OUF, Chief Executive/Secretary, RSGB

ARRL INTERNATIONAL HUMANITARIAN AWARD

Terms of Reference

Whereas amateur radio operators engage in assistance to people in need throughout the world, and daily communication between common people from all parts of the world, and

Whereas amateur radio is the only medium where average people throughout the world can meet to talk to each other and spread goodwill across otherwise impenetrable political boundaries, and

Whereas the world is in need of positive efforts toward international understanding and peaceful communications,

Be it resolved that the American Radio Relay League hereby establishes a committee for the purposes of developing an annual international prize to be awarded to truly outstanding amateur radio operators in areas of international humanitarianism and the furtherance of peace.

1Inasmuch as amateur radio operators provide public service and promote international goodwill and understanding, this award is dedicated to those amateurs who, through amateur radio, are devoted to promoting welfare of mankind. In order to help all people, both amateur radio operators and others, to understand the purpose and importance of this award, it shall be called the, *ARRL International Humanitarian Award.*

2The selection of the recipient of the award shall be made by a committee appointed by the President of the ARRL, and shall serve at his or her pleasure for the term of office.

3Any licensed radio amateur world-wide, or group of amateurs who, by use of their skills of amateur radio, have provided extraordinary service for the benefit of others in times of crisis or disaster, is qualified to receive the award.

4Nominations for the award will be accepted by the committee from a licensed radio amateur, governmental or any other organisation which has received the benefits of the radio amateur's extraordinary service. In the event that no nominations are received, the committee may determine possible recipients or may decide to make no award in a given year.

Nominations must contain the following

a) A summary of the actions of the nominee, which qualify the recipient for the award.

b) Statements from at least two references including names and addresses for verification

All nominations and supporting materials for a given year's award must be submitted in writing in English to *ARRL International Humanitarian Award, 225 Main Street, Newington, CT 06111,* in sufficient time that they are received by December 31.

5The award is to include the following elements:

a) An appropriate plaque or medallion to be presented at the ARRL National Convention or at the recipient's home convention.

b) An article describing the recipient and his/her extraordinary achievements is to be written for use in *QST* and consumer magazines.

6ARRL will seek voluntary contributions to create an endowment to fund the award, with suitable recognition to be given to donors. Should the expenses of administering the award exceed the income available from the endowment, these expenses will be reimbursed as authorised by the ARRL Board.

7Because of the importance of this award to promoting international friendship among, not only amateur radio operators, but all persons of the world, extreme care must be taken to insure that each recipient is deserving of the award. Therefore, the Committee will be responsible for verification of all nominations, with the most rigorous scrutiny given to finalists in the selection process.

8Initial promotion of the award is to include the following:

a) A major article on the subject to appear in *QST.*

b) A design contest among radio amateurs world-wide, for the development of a distinctive plaque or medallion to be used as the award.

The ARRL are at present seeking nominations for the 1987 and 1988 ARRL Humanitarian Awards. The deadline for the 1987 ARRL Humanitarian Award is December 31, 1987 and the deadline for 1988 is December 31, 1988.

Contributed by Mary E Schetgen N7IAL, Assistant Secretary, The ARRL Foundation

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION (ALARA) AWARD

This award is available to all YL, OM and SWL operators.

Applicants are required to provide the following:

VK/ZL	There are to be 10 members contacted/heard, and to include five Australian call areas.
DX	Five members to be contacted, and to include four Australian call areas.

All contacts to have been made with members on or after June 30, 1975. No repeater contacts will be allowed.

Applicants must submit a complete extract of log entries, which is to be certified correct by two other amateurs whose signatures must be appended. In the event of an applicant in an isolated location being unable to obtain certification, QSL cards should be forwarded in lieu.

Application must include full name, address, signature and call sign of the applicant.

All contacts must be from the same call area. Official ALARA Net contacts do not qualify.

Special endorsements available; eg mixed, all CW, all phone, all 28 MHz, etc. Endorsement stickers available for each 10 additional members contacted. For DX applicants, five additional members contacted.

Applications should be accompanied by the equivalent of $A3 or seven IRCs.

The fee for additional stickers is $A1. (No fee for stickers awarded with the original issue of the certificate, only for additional stickers applied for at a later date!).

Applications should be forwarded to the ALARA Awards Custodian, Mavis Stafford VK3KS, 16 Byron Street, Box Hill South, Vic, 3128.

Log extract should include Date/Time UTC, Band, Mode, Call Sign of ALARA Member Contacted, Report Sent, Report Received, Name of ALARA Member.

PERSEKUTUAN PENGAKAP NEGARA BRUNEI DARUSSALAM AMATEUR RADIO CLUB AWARD

The above award is available to licensed amateurs or shortwave listeners who can submit proof of confirmed contacts with/or having heard, from V85 stations of Negara Brunei Darussalam under the following requirements:

DX stations in CQ Zone 28 are required to contact eight V85 Scout member stations and any two club stations making a total of 10 QSL cards.

DX stations other than CQ Zone 28 will need to contact three V85 Scout members and any of two club stations making a total of five QSL cards.

SWLs require 18 V85 stations and two club stations making a total of 20 QSL cards.

Applicants should send a log extract (GCR) in alphabetical order by suffix, photocopies of QSL cards along with a fee of US$5 to the Award Manager, PO Box 2227, Bandar Seri Begawan 1922, Brunei Darussalam.

The V85 amateur radio club stations are: BS, BP, JAM, IS and BSJ.

Scout members who have personal call signs are: BA, HG, IR, HD, RA, SB, SK, RM, DU, MI, NO and MH.

The PPNBD Amateur Radio Club is also issuing an award to commemorate 10 years of participation in Jamboree on the Air (JOTA). The Association will issue a Special Award Certificate to licenced amateurs who have established two-way radio contact.

DX stations in CQ Zone 28 need to confirm contact with 10 V85 stations and any of the two club stations making a total of 12 QSL cards.

DX stations other than CQ Zone 28 require contact with four V85 stations and any of the two club stations, making a total of six QSL cards.

SWLs require 18 V85 stations and any of the two club stations, a total of 20 QSLs.

Contacts will be valid from October 17, 1987, to April 17, 1988.

Any band, any mode.

Club stations will be V85: BS, BP, JAM, TS and BSJ.

Applicants should send a log extract (GCR) in alphabetical order by suffix, photocopies of QSL cards along with a fee of US$5 to the Award Manager, PO Box 2227, Bandar Seri Begawan 1922, Brunei Darussalam.

Applications must be received before December 31, 1988.

AWARDS PROGRAM OF THE HUNGARIAN RADIO AMATEUR SOCIETY

General Rules as at January 1, 1986

1. Hungarian Awards can be obtained by licenced radio amateurs and SWLs world-wide. The specific rules of awards are given below.
2. All amateur bands and modes may be used, except contacts via repeaters.
3. Contacts/reception may be made from any location within the same DXCC country. Each station may be contacted only once on any band and any mode.
4. The log should show the call sign/s, name and QTH of the applicant, as well as the following information:

Station Worked/Heard; Date; Time in UTC; Band; Mode; Received Report (SWLs should indicate the station being worked by the heard station).

5. Each list must be accompanied by a statement from the applicants national society or from any two amateurs, other than the applicant, that the QSL cards of the contacts/receptions listed are in the possession of the applicant and that the items of the cards are correctly listed. (The exceptions are the Szeged Festival and DUNAFERR Awards when only a log extract is required, plus the confirming piece from QSL cards).

Foreign participants in the HA-DX Contest may apply for the following Hungarian Awards upon the contest QSOs using a separate application form: Budapest, Balaton, Dunakanyar, Pannonia, Savaria and WHD.

6. The fee for Hungarian Awards is as follows:

Pannonia, Savaria, Balaton and Budapest — all 10 IRCs each; Hungarian Rummy Diploma/HRD, Hungarian Canasta Diploma/HCD, Szeged Festival and Worked Hungarian Districts/WHD — all five IRCs each; Videotron Bronze — two IRCs, Videotron Silver — three IRCs and Videotron Gold — five IRCs; Hungarian Castle Series/HCS — Bronze, five IRCs, Silver, eight IRCs and Gold 10 IRCs; Dunakanyar/DD — six IRCs; Dunaferr no fee but postage should be sent.

7. The decision of the MRASZ Award Committee is final.
8. All correspondence may be sent to the Manager, or to the Hungarian Radio Amateur Society Award Committee, PO Box 22, Tiszakecske, Hungary. H-6061.

Pannonia Award

The Radio Amateur Society of Gyor-Sopron County issues this Award. Applicants must submit proof of contacts made on or after January 1, 1966.

Applicants must obtain eight QSL cards from HA/HG 1, 2, 3, 4 call areas/two cards from each call area/more than one band. Manager: Radio Club HA1KSA, PO Box 79, Gyor, Hungary. H-9001.

Savaria Award

The Radio Amateur Society of Vas County issues this Award. The applicant must submit proof of contacts made on or after January 1, 1976.

Applicants must obtain 10 different HA1 or HG1 QSL cards. Manager: Savaria Radio Club, Puskas Tu7, Szombathely, Hungary. H-9700.

Balaton Diploma/BD

The Radio Club Siofok issues the BD. The applicant must submit proof of contacts made on or after January 1, 1967.

Amateurs must make two-way communication with amateurs indicated under a), b), or c). Stations require 15 points and at least one contact should be with a member of the Radio Club Siofok.

a) Radio Club Siofok and its members count as five points. HA, HG3KGJ, KHL, GI, GJ, GQ, HE, HL, HQ, HZ, IG, IK, IQ, IS, NG, 4XW, 6NP, 8UA.

b) Stations with a permanent station around Lake Balaton count for three points. HA, HG1KXX, XA, XH, XX, ZY, 2KRQ, RQ, RC, SH, Y, YRC, 3KHB, KHO, GG, GO, HK, HO, HU.

c) Any other stations in Zala, Veszprem and Somogy County count one point. HA, HG1KRA-KRZ, KXA-KXZ, KZA-KZZ, RA-RZ, XA-XZ, ZA-ZZ, DRA-DZZ, 2KPA-KTZ, PA-TZ, ENA-EZZ, 3KGA-KIZ, GA-IZ, FLA-FSZ.

Manager: Jozsef Turjanyi HA3GJ, PO Box 78, Siofok, Hungary. H-8601.

Budapest Award/BPA

This Award is issued by the Radio Amateur Society of Budapest. Applicants must submit proof of contacts made on or after January 1, 1959.

Stations must have obtained 25 different QSL cards from HA, and HG5 stations. Manager: Verebes Janosne HA5YR, PO Box 64, Budapest, Hungary. H-1475.

Hungarian Rummy Diploma/HRD

The Amateur Radio Society of Somogy County issues the HRD Awards. The applicant must submit proof of contacts made on or after September 1, 1972.

The HRD Award is issued in three categories.

BRONZE: "hand rummy" collecting 14 cards in accordance with the rules of the game.

SILVER: full collection of one of the four series plus one Joker of the same colour. For example — diamond 2 . . . A plus red Joker. /14 cards.

GOLD: full pack, containing 54 cards.

HRD-108: two packs of QSL cards are necessary for the Award from 108 different stations.

Hungarian Canasta Diploma/HCD: Three canastas /21 cards, have to be confirmed in accordance with the rules of the game.

The canasta contains seven cards of the same figures, two of them can be equivalent; eg seven cards of figure 5, seven cards of figure 8, and seven cards of Kings. Not more than three cards substituted by the four Jokers and the "little-Jokers"/figure2/ in one canasta.

Note: Contacts on or after April 4, 1980 are valid for the HRD-108 and HCD Awards.

Amateur stations belonging to the radio club of "Tivadar Puskas" can send any kind of HRD card for QSOs. These stations are: HA, HG3 GA, GB, GD, GH, GL, GM, GR, GU, HD, HF, HH, HM, HS, HV, HX, HY, KGC, KGL, KGR, KGU, KHC, KHJ.

Allocation of the HRD cards:

HA HG Call Areas	Spade	Heart	Diamond	Club
1	A		J	
2	2		J	
3	3		J	
4	4		J	
5	5		Q	
6	6		Q	
7	7		K	
8	8		K	
9	9		K	
0	10		K	

? ? ? red and black Joker = Y =

Manager: Jance Mihalyfy HA3GA, PO Box 173, Kaposvar, Hungary. H-7401.

Szeged Festival Award

The Amateur Radio Society of Csongrad County issues this Award yearly for QSOs made between July 1 and August 31, from 0000-2400 UTC. The deadline for applications is December 31, to the manager.

Stations must gain five points from two-way contacts as indicated in a) and b).

a) Stations with permanent residence in Szeged count as two points. /HA, HG8CA, CB, CD, CH, CP, CT, CV, CZ, CX, DC, DE, DF, DP, DQ, DR, DT, DZ, EK, EL, KCC, KCK, KDA.

b) Any other stations in Csongrad County counts as one point. HA, HG8CA-FZ, KCA-KFZ, LSA-LZZ.

Manager: Imre Kelemen HA8CH, PO Box 673, Szeged, Hungary. H-6701.

Worked Hungarian Districts/WHD

The Hungarian Radio Amateur Society issues this Award and applicants must submit proof of contacts made on or after January 1, 1958.

Stations need 10 QSL cards from any five Hungarian call areas/ HA, HG1, 2, 3 . . . 0. Two cards are required from each call area on two bands. Manager: Janos Retkes HA8UB, PO Box 22, Tiszakecske, Hungary, H-6061.

Videoton Award

The Videoton Radio Club issues this Award for applicants who submit proof of contacts made on or after January 1, 1969.

Only HA4 and HG4 QSLs are valid. There are three groups of special cards, 3-4-3 different cards illustrating a BC receiver, a TV receiver and computer set respectively.

This Award is issued in three categories:

— BRONZE: one complete set of any group.
— SILVER: a complete set of any two groups.
— GOLD: all ten cards.

Manager: Halmi Belane HA4XP, Berkes F.tp.40, Szekesfehervar, Hungary. H-8000.

Dunakanyar Diploma/DD

The Radio Amateur Society of Pest County issues the DD Award. Applicants must provide proof in the form of five different QSL cards from the HA, HG7 call areas. Contacts to be made on or after January 1, 1970.

Manager: PRASZ Award Manager, HA7PL, PO Box 36, Budapest, Hungary. H-1387.

Hungarian Castle Series/HCS

The Hungarian Radio Amateur Society issues the HCS Award. Applicants must submit proof of contacts made on or after January 1, 1968.

Many Hungarian stations in each call area have special cards for the HCS Award — from number 1 to number 36. It is issued in three categories.

— BRONZE: Numbers 1-12 or 13-24 or 25-36.
— SILVER: Numbers 1-24 or 13-36.
— GOLD: Numbers 1-36.

The application must be accompanied by the confirming piece from the QSL cards.

Repartition of the QSL numbers by call areas is as follows:

HA. HG1 — 7, 22, 25, 31
HA, HG2 — 6, 8, 12, 15, 21, 23, 30, 32, 35
HA, HG3 — 3, 14, 23, 30, 32, 33, 35
HA, HG4 — 17, 23, 30, 32, 35
HA, HG5 — 1, 13, 36
HA, HG6 — 4, 10, 11, 34
HA, HG7 — 2, 5, 19
HA, HG8 — 16, 20, 24
HA, HG9 — 18, 27, 28, 29
HA, HG0 — 9, 26, 29

Manager: Janos Retkes HA8UB, PO Box 22, Tiszakecske, Hungary. H-6061.

Dunaferr Award

Issued by the Dunaujvaros Radio Club yearly for QSOs with HA and HG4 stations made between April 22 and May 8 from 0000-2400 UTC. The deadline for applications is May 31, to the manager.

Two-way contacts are required as indicated in a), b), c) below. Applicants require 40 points.

a) Club Stations in Dunaujvaros count as three points. HA, HG4KXG, KYJ, KYH, KYP, KYV, YYJ.

b) Individual stations in Dunaujvaros and other club stations from Fejer County count as two points. HA, HG4BG, XG, XU, XX, YA, YI, YJ, YK, YL, YO, YP, YQ, YU, YV, ZE, ZM, ZV and each call sign between HA, HG4KXA-KZZ, YXA-YXZ.

c) Individual stations from Fejer County count as one point. All HA and HG4 stations with a two letter suffix.

Note: This Award/Sticker may be claimed every year anew. Manager: Radio Club Dunaujvaros, Award Manager HG4YI, PO Box 132, Dunaujvaros, Hungary. H-2401.

TASMANIA DAY AWARD

The *Tasmania Day Award* is created to commemorate the foundation of Tasmania by Abel Tasman in 1642. The award is sponsored by the Tasmanian Division of the Wireless Institute of Australia, and with the blessing and assistance of the Tasmanian Government.

RULES

CONTEST PERIOD: From 0800 UTC, November 21, to 0800 UTC, November 29, 1987.

OBJECTS OF THE AWARD: to encourage any licensed amateur to make contact with Tasmanian licensed amateurs over the above period. Shortwave listeners may also participate.

AWARD BANDS AND MODES: Any band/mode available to the applicant may be used.

CONTACTS: Any Tasmanian station may be contacted **once** only.

To qualify for the award, any licensed amateur or shortwave listener must log the following Tasmanian contacts:

Australian Amateur Stations — five only
New Zealand Amateur Stations — three only
All other overseas Amateur Stations — one only
Shortwave Listeners — five only with both call signs included.

SUBMISSION OF LOGS: An extract of log, signed by the applicant, together with the sun of $A2, should be sent to:

The Award Manager, Mr R Jackson VK7NBF, Falmouth House, Falmouth, Tas. 7215.

QSL cards and counter-signatures are **not** required. Logs should reach the Award Manager before January 31, 1988.

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Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
PO Box 883, Frankston, Vic. 3199

It is some time now since I made my last public appeal for information and assistance.

This does not mean that the information and assistance is no longer required.

Letters I receive ask for details of where courses are being run, or correspondence courses, or for comments on books or equipment. Some of these queries I can answer or hand over to some knowledgeable person, but often all I can do is quote information from the Call Book or magazines.

May I ask again that, if your club or group is running classes, either regularly or on an occasional basis, you let me know about them and let me have the name of the contact-person.

If you have come up with some good new idea or method of teaching, or have found some useful aids, please share them with all those who are devoting time and effort to encouraging the new recruits. Either send me a note, or better still, write it up for publication in this magazine.

A member of my local club recently offered to compile a list of all the CW practice sessions that are run on air. I do have some frequencies and times, but it would be useful to be able to distribute a list on request, so I accepted the offer with enthusiasm.

Similarly, I would be pleased to have listings of all the on-air nets which are helping novices to upgrade so that I could direct new novices there.

I am interested also in hearing about new books or articles which are relevant to either level course. The original aim for the Study Guides was to have recommended texts or chapters listed for each section. We all have our own preferred resource materials, and I have prepared a short list of recommended texts for students, but I am sure that there are many useful publications of which I am not aware. It may still be possible to add a reading list to both Guides.

When I receive a query from a potential amateur, I try to direct him or her to the nearest club for classes or general support. I usually have no way of knowing how the club responds. I do not have time to notify each club every time I distribute its mailing address, but I trust that the new members are made welcome.

Some of the letters I receive are very appreciative of help given by friends, clubs, ROs or other amateurs. Others say "I have not been able to get much help from the local club". I find this disappointing especially if I have recommended the club in the first place.

I do have a problem, though, when I receive requests for help from students who are out of reach of clubs, groups or classes. I have asked previously for members who would be willing to offer some support to a student, either in their own area or on a corresponding basis, but so far I have had very little response.

Those who are studying on their own or by correspondence need all the support we can offer. So far I have not taken the liberty of passing on names selected from the Call Book, but I have been tempted to. Perhaps clubs could register their interest in "adopting" one or two of the isolated students. Or I could set up a "Pen Friends Bureau".

Helping the newcomers has been a longstanding tradition in amateur radio. Let us encourage its continuation. I look forward to receiving names of willing helpers.

I am pleased to announce that, by the time you read this, the Novice Study Guide should be available from the Divisions, the Executive or from me. It is advertised elsewhere in this issue.

It is intended to be used by both class instructors and students, in conjunction with the DOC syllabus.

We will, of course, be looking for feedback from those using it. I will collate all comments received.

Once again I would like to thank all those, both Institute members and DOC officers, who have contributed to it.

Best wishes to all who are sitting the November examinations. Remember, read the question and all the answers. May you all receive a nice new licence for Christmas.

73, Brenda VK3KT

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Light Alarm

A circuit which will oscillate in the presence of suitable light.

Peter Parker VK6NNN
C/- Witchcliffe Post Office, WA. 6286

The 100 kohm variable resistor in this circuit governs the sensitivity. The LDR can be replaced with two probes to become an audible continuity indicator.

A rain alarm can be made by inserting the probes in a plastic bucket. A bath filling indicator can be made in the same way.

This unit can also be used as a soil moisture indicator to determine when plants require watering.

With an LDR, which costs approximately 80 cents, the unit can function as a wake-up alarm. The transistor is not critical.

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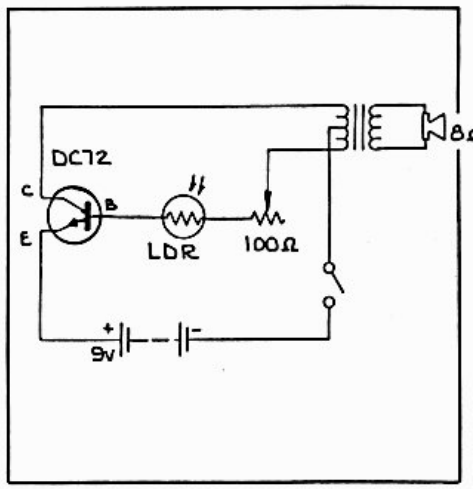
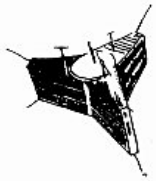


PARTS LIST

1 kohm - 8 ohm Optional Transformer
8 ohm Speaker
100 kohm Variable Resistor
Light Dependent Resistor
OC72 or equivalent Transistor
9 volt Battery
Switch



AMSAT Australia

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA. 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Primary Frequency: 3.685 MHz
Secondary Frequency: 7.064 MHz
AMSAT SOUTH WEST PACIFIC
2200 UTC Saturday
14.282 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian Elements from the AMSAT Australia Net. *This information is also included in some WIA Divisional Broadcasts.*

ACKNOWLEDGMENTS
Contributions this month are from Bob VK3ZBB, VK5AGR BBS and UoSAT Bulletin Board.

AO-10 UNAVAILABLE FOR USE

AMSAT-OSCAR-10 must not be used for communications for several months due to complete discharge of the on-board battery. The spacecraft initially went off the air on Tuesday, August 4, with the transponder off and the Engineering Beacon ejecting meaningless telemetry. The situation was corrected by Wednesday, after the intervention of a command station to reset the IHU. The upset of transponder operations is likely to have been caused by a random glitch in the IHU output which commanded the transponder off. The IHU has been unusable since its memory has sustained massive radiation damage.

The sun angle is too low to allow adequate amounts of solar radiation to be absorbed by AO-10s solar panels — available power will be reduced to near-zero levels by late September. The entire satellite will then power down, the second episode in its life when complete power down has occurred. During these episodes, power levels are so low that no on-board electrical systems can be sustained.

Power down is inevitable since controllers no longer are able to maneuver the satellite's attitude in orbit. This ability was afforded by the IHU energising the magnetorquers in precise sequence and timing. Since the IHU is inoperative, the satellite's attitude stays fixed with regard to inertial space. However, since the satellite and the earth move around the sun as a system, the attitude of AO-10's solar panels with respect to the sun changes seasonally. We are now approaching the worst season for AO-10 sun angles.

Total abstinence is required for a long while, until the sun angle will be again good enough for charging the battery. The next period of communication via AMSAT OSCAR-10 will start around November 20, when illumination is better than 75 percent.

Until further notice from AMSAT — Do Not Use OSCAR-10! ! !

FUJI-OSCAR-12

Fuji-OSCAR-12 has completed its first full year in orbit and, although it continues to be plagued by a chronic power shortage, new software has been loaded into the on-board computer (OBC) to enhance the Mode JD mail box operation, to include:

1The maximum number of messages is increased to 100. If memory for messages is used up, older messages will be deleted and their memory space will be used to record the latest mail. There is 150 kbytes of memory space for storing messages.
2Mail can be deleted by its receiver as well as by the sender. You can save memory space by using K command after reading personal mail sent to you.
3Trailing blanks after "subject" are removed and are no longer sent.

New commands included in the new software package include:

a) F<d> command
Show file headers posted on the day specified by <d>. Currently <d> should be a decimal number standing for the day. Month or year cannot be specified; ie "F6" means "list files posted on sixth day (of any month, year)."
b) M command (M = Mine)
Show file headers addressed to current user. This command is useful when the user wants to see only his personal mail quickly.
c) B command (B = Bulletin)
Show file headers addressed to "all". You can look for bulletin or general information without listing lengthy personal mail headers.
d) U command (U = User)
Show call signs of users currently logging into the mail box. This command is useful when you set your "FRAC" and MAXFRAMES parameters optimum for number of current users. SSID is ignored when listing call signs.

MODE JA OPERATING PROCEDURES

During the early 1980s. AMSAT operation planners studied means of reducing QRM on the Mode B passband caused by Doppler shift. Varying Doppler shift magnitude and direction at different locations caused stations to drift into one another. To minimise such disruption and to facilitate net operations, a standard tuning practice was recommended. All Mode B stations were advised to adjust only their uplinks — maintaining a constant downlink frequency as heard at their QTH. This reduce Doppler — induced QRM significantly when employed on AO-10, Mode B.

Now, however, a study by WA2LQQ concludes that the application of this standard practice to FO-12 Mode JA has an unexpected and undesired effect. Not only does it not reduce Doppler — induced QRM on Mode JA, but it actually makes the situation three times as bad as it would be if the receiver were adjusted instead of the transmitter.

The difference has to do with the use of the 70-centimetre downlink as a pilot frequency. SInce Doppler shift on 70-centimetre is about three times greater than at two-metres, adjusting the receiver (which experiences higher Doppler shift than the transmitter) is the best tactic. Aggravating the situation is the fact that FO-12's relatively low orbit means fairly high Doppler shift and high rate of change of Doppler shift magnitude.

A preliminary recommendation is being made that Mode HA users adopt the practice of adjusting only their *receivers* to stay tuned into the QSO. This will not totally eliminate Doppler shift of the QSO and minor transmitter frequency tweaking will always be required.

From ANS

RS-1, launched October 26, 1978, continues to be heard. Latest reports of the famous "5015" telemetry block on 29.400 MHz come from Toshi JR3FRF. He happened upon RS-1 while monitoring for RS-10 and 11. The transponder and telemetry formatter of RS-1 as well as the battery failed many years ago, but the transmitter still works. When illuminated by the sun, the solar panels provide sufficient energy for RS-1 to be heard sending its spurious telemetry.

From ANS

SATELLITE ACTIVITY FOR THE MONTH OF JULY 1987

1 LAUNCHES

The following launching announcements have been received:

INTL NO 1987	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
055A	Cosmos 1862	Jul 01	USSR	97.7	679	645	82.5
056A	Cosmos 1863	Jul 04	USSR	90.8	383	208	72.9
057A	Cosmos 1864	Jul 06	USSR	104.8	1019	977	83.0
058A	Cosmos 1865	Jul 08	USSR	89.5	327	204	64.8
059A	Cosmos 1866	Jul 09	USSR	89.8	386	177	67.0
060A	Cosmos 1867	Jul 10	USSR	100.8	813	797	65.0
061A	Cosmos 1868	Jul 14	USSR	94.5	726	279	74.0
062A	Cosmos 1869	Jul 16	USSR	97.8	679	647	82.5
063A	Soyuz TM-3	Jul 22	USSR				
064A	Cosmos 1870	Jul 25	USSR	88.7	282	168	71.9

2 RETURNS

During the period 56 objects decayed including the following satellites:

1987-044A	Progress 30	Jul 19
1987-046A	Cosmos 1847	Jul 22
1987-056A	Cosmos 1863	Jul 18

3 NOTES

1987-063A Soyuz TM-3 carried cosmonauts Aleksandr Viktorenko and Aleksandr Aleksandrov of the Soviet Union and Mohammed Faris of the Syrian Arab Republic.
The spacecraft will dock with the manned complex MIR.

SATELLITE ACTIVITY FOR THE MONTH OF AUGUST 1987

1 LAUNCHES

The following launching announcements have been received:

INTL NO 1987	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
065A	Cosmos 1871	Aug 01	USSR	88.3	212	191	97.0
066A	Progress 31	Aug 03	USSR	88.8	369	193	51.6
067A	PRC 20	Aug 05	China	90.2	395	171	63.0
068A	Meteor 2-16	Aug 18	USSR	104.1	974	954	82.5
069A	Cosmos 1872	Aug 19	USSR	89.6	333	208	72.9

2 RETURNS

During the period 49 objects decayed including the following satellites:

1975-049A	Molniya 1-30	Aug 12
1983-110A	Cosmos 1507	Aug 19
1985-114B	USA 14	Aug 09
1987-013A	Soyuz TM-2	Jul 30
1987-058A	Cosmos 1865	Aug 14
1987-065A	Cosmos 1871	Aug 10
1987-067A	PRC 20	Aug 23

3 NOTES

1987-067A PRC 20 carried two micro-gravity experimental devices from a French company and was recovered at a predesignated area in China.
1986-066A Progress 31 carried expendable materials and varied loads for the orbit station MIR.

—Contributed by Bob Arnold VK3ZBB

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AMSAT—AUSTRALIA NEWSLETTER

This fine monthly publication published on behalf of AMSAT-Australia by Graham VK5AGR, now has 200-plus subscribers. Should you also wish to subscribe, send a cheque for $20 made payable to AMSAT-Australia and post to:
AMSAT-Australia, C/- PO Box 2141, GPO, Adelaide, SA. 5001.

The Newsletter provides the latest news items on all satellite activities and is a must for all those seriously interested in Amateur Satellite activities.

SUNDAY EVENING NEWS BROADCASTS

The value of the Sunday Evening News Broadcasts has been demonstrated once again in recent months with the launch of RS-10 and 11 and the commencement of the Fuji OSCAR-12 BBS Bulletin Board Service. The frequency is 3.685 MHz at 1000 UTC.

de Colin VK5HI
ar

BEACONS

A reminder to anyone with input to either the tone access or pager interference inquiry should submit their material without delay. As well as the notes in this column, the text of the respective inquiries has been read in the Federal Tapes.

A temporary frequency allocation has been made to establish a 10 metre beacon at Cairns. The frequency is 28.265 MHz. All 10 metre beacons, world-wide, are subject to frequency and operating changes from 1990 to a shared frequency, shared time slot concept.

A reminder to all beacon and repeater groups to keep the Federal Data Base up-to-date on these systems. Any changes, additions, etc should be sent to FTAC, PO Box 300, Caulfield South, Vic. 3162.

73 de Tim VK2ZTM
ar

Radio Amateur Club Old Timers

QSO PARTIES — WINTER 1987

Participation in the 40 and 80 metre parties in August was at a low level, considering that one took place on the evening of the monthly broadcast, and the other a week later. However, eight of the none who competed in poor conditions on 40, and eight of the 11 who were in the 80 metre one sent in logs — a high percentage which was much appreciated.

40 m	MODE	QSOs	MULT	TOTAL
VK3VF	CW/SSB	9	5	225
VK2AWA	CW/SSB	8	4	160
VK3XB	CW	8	4	160
VK3KS	CW	8	4	160
VK7BJ	SSB	6	5	150
VK7RY	CW/SSB	5	5	125
VK3ZC	CW	6	4	120
VK3XF	CW/SSB	7	3	105
ZL2AT	SSB			175
ZL3BJ	CW/SSB			150
ZL2BD	SSB			100

80 m	MODE	QSOs	MULT	TOTAL
VK3VF	CW/SSB	16	7	560
VK3KS	CW/SSB	16	7	560
VK3XB	CW/SSB	16	7	560
VK3XF	CW/SSB	12	6	360
VK7BJ	SSB	12	6	360
VK2AKE	CW/SSB	11	5	275
VK3ZC	CW	10	5	250
VK7RY	CW	9	4	180
ZL3BJ				595
ZL2AT				490
ZL2BD				330
ZL3AY				250

MORSEWORD 8

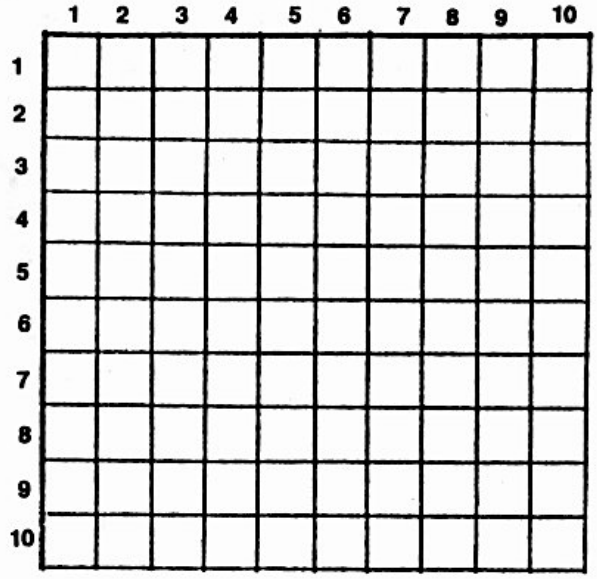
***Compiled by* Audrey Ryan**
30 Starling Street, Montmorency, Vic. 3094

ACROSS

1. Road
2. To close completely
3. Resign
4. Fastener
5. Boy's name
6. A forbidden thing
7. A part of speech
8. Swerve
9. Wander
10. Sausage

DOWN

1. Bantu warriors
2. Keen
3. Pews
4. To murmur
5. A fish
6. Sudden burst of energy
7. Hand
8. 'Rob . . .' (novel)
9. Smut from the chimney
10. Monarch



Solution page 62.

Club Corner

KARRATHA RADIO GROUP

Karratha Radio Group produced and transmitted 'live' by torch light, an official VK6WIA Practice Morse Broadcast Session, portable from the ironstone hills of Burrup Peninsula, located near the Port of Dampier, in the north-west of Western Australia.

The group, of mixed interests, formed in June this year, meets every week studying for the novice examinations. They are all very keen listeners to the VK6WIA Practice Morse Broadcast, received at Karratha reasonably well.

We decided to gain "hands on" experience to produce our own program. Setting up the first field project involved building an antenna and finding a suitable transmitting site well away from Karratha and Dampier, the mining and petro-chemical centre of our north-west.

The site was located near Hearson Cove, eight kilometres north of Dampier. A one wave-length horizontal loop for 80 metres was chosen as adequate to make the direct communication with Perth, about 2 000 kilometres south.

The transceiver was a small portable IC730 (100 watts SSB — 50 watts CW), and three 12 volt batteries (fully charged but without using a back-up generator).

After committing ourselves to the VK6WIA Practice Morse roster we began to wonder if this set-up would be adequate.

The antenna, although 85 metres long, did not pose any problem for space, but height was more difficult. Four steel star-pickets were installed between the cracks of the ironstone rocks and the mini Rhombic went up into its traditional shape, head first towards Perth.

The transceiver was switched on and 28 eyes and ears froze! "This is VK6WIA/P calling Perth for a signal report." To the group's surprise, "UR 5/9, go-ahead!". Everyone yelled; "Just great, it works!"

Malcolm VK6LC, tuning up.

Keith, checking the power supply.

The date for the State Broadcast was arranged for Wednesday, July 22, and now we had to design the program to start at five words per minute, progressing up to 20 WPM.

The group worked very hard producing texts that were orientated to their area or town. Open air shacks are just the thing this time of the year! The weather at Karratha is beautiful, the days being around 30 degrees Celsius and the nights cooling down to 23 degrees Celsius.

On Wednesday, the 22nd, the night was excellent, with a clear sky, bright stars and a slight breeze. The group arrived, set up all the equipment and stood-by.

The broadcast started and each person, as author of their text, conducted its read back. This was really something for the group to produce their own CW session and realise the time and effort that goes into such programs. The portable station and equipment was very well set up with everyone participating in one way or another.

The broadcast went for two hours including a very large call back response. Everyone enjoyed the exercise with the WIA and sharing their interest with others.

It was a lot of fun — getting it all together and making it such a success. It is hoped this article will attract other groups into similar club interests.

Thanks are extended to the VK6 Division and the Department of Communications.

Wally (13 years), the CW Read-back.

STATION INFORMATION: VK6WIA/P

Equipment	IC-730 (100 watts SSB — 50 watts CW)
CW Equipment	VK6WIA Electronic Tape Keyer
Power Supply	3 x 12 volt Car Batteries
Antenna	1 λ Horizontal Loop for 80 metres
Lighting	Battery Torches
ATU	FC-102
Co-ordinator	Malcolm Johnson VK6LC
Group Leader	Steve Hill VK6NAK
Time Keeper	Michael Van De Zanden VK6AMZ
Photographer	Michael Tutt SWL

FOOTNOTE:

At the novice examination held on Wednesday, August 26, four of the group passed at least one subject, including Wally (aged 13) who passed the code, both sending and receiving.

—Contributed by Malcolm Johnson VK6LC, VK6WIA Councillor and Practice Morse Co-ordinator

ar

Peter and Group in action.

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

1988 MEMBERSHIP DUES

At the September Council Meeting the budget for the next year was considered. It was determined that the Divisional component of the membership fee would remain unaltered. For 1988 however, the Federal component of the fee will have to rise by $3.00. Full details of the 1988 fee structure as it applies to VK2 members will be given in the next *Mini-bulletin*. If you know anyone who is thinking of joining, you might advise them that applications received prior to the end of the year will be processed at the 1987 rate. Contact the Divisional Office for application forms between 11 am and 2 pm, Monday to Friday, on (02) 689 2417, or Wednesday night between 7 and 9 pm.

VK2BWI — Morse training sessions

A couple of additional operators have become available recently, but additional help is still required. Either call in to the session which is conducted nightly on 3.550 MHz or contact the Divisional Office.

GENERAL ACTIVITIES

Friday, November 20, has been set aside for an informal dinner. Details from the office or via the broadcasts . . . A Trash and Treasure sale will be held in the car park at Parramatta, Sunday afternoon, November 29 . . . An Old Timers group meets in the library at *Amateur Radio House* on the third Thursday of the month. Further details from Tom VK2JTD, or the office . . . Wagga ARC was unable to conduct their field day, which had been scheduled for late October . . . The last VK2WI broadcast for the year will be on December 20, and will recommence in 1988 on January 10.

NEW MEMBERS

A warm welcome is extended to the following new members who were in the September intake.

R Z Bojarski	VK2EEF	North Bondi
E J Brown	Assoc	Guildford
B Cobby	VK2MBT	Balmain
P F Eotvos	Assoc	Bowral
P A Hall	Assoc	Belrose
H J Hogrefe	VK2XHH	Holmesville
R L Johnson	VK2DRL	Castle Hill
S R Lee	Assoc	Campsie
R A Lord	VK2FDK	Tanilba Bay
R P Murnane	Assoc	Manly Vale
E G Popham	VK2EZQ	Mount Colah
P M Reid	Assoc	Murwillumbah
B M C Stoddart	Assoc	Lambton North
C E (Mrs) Stoddart	Assoc	Lambton North

ar

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

AMATEUR RADIO PUT TO GOOD USE!

A couple of months age, Trevor O'Daniel VK5NTZ, (since upgraded to VK5ATZ), was travelling along a back-track between Swan Reach and Stockwell, when he noted a set of fresh-looking skid marks. On investigation, he discovered that a car had gone off the road, skidded along and finally wedged itself *under* the 36 inch concrete pipe-line. Those of you who know, what I call, the Mannum Pipeline, will know that there is not much clearance underneath! So, you can imagine the state of the car and Trevor's consternation at finding the driver still trapped inside (where he had been for an hour when Trevor arrived). Trevor went back to his own vehicle and was able to contact a VK3 on 80 metres. The VK3 contacted Blanchetown Police, who in turn contacted Adelaide, and some two hours later the driver was finally freed using the "Jaws of Life" to extricate him. When I heard the story from Geoff Taylor VK5TY, the gentleman was making a steady recovery in the Royal Adelaide Hospital (RAH), despite a broken pelvis, dislocated hip and assorted sundry bruises and contusions. I don't doubt that he will be singing the praises of amateur radio in future, and thanking his lucky stars that Trevor came along when he did.

And, as if that wasn't enough excitement for one week, Trevor also learned that he had passed his AOCP. Trevor, like many other OMs and YLs in VK5, owes much of the credit to Geoff and the "VK5TY course of instruction." Geoff's wife, Christine has gained her AOLCP this year and, like me, was able to get the OMs old "Z" call — in her case, VK5ZCQ.

It was good to hear Sue VK2DCR, back on the Adelaide air-waves after a long absence (when she moved to Sydney). If you don't recognise the call sign, you might know her better as VK5AYL — her former call sign — which she is hoping may still be available.

SILENT KEY

It is with deep regret that we note the untimely passing of Dave Adlam VK5QL. Dave, as VK5ZAQ, was Secretary of the VHF Group in 1975. At the beginning of April 1977, he was co-opted to Council as Assistant Treasurer, and by the end of that month, has been nominated and elected to Council as Treasurer, a position he held until April 1980.

Dave had not been active for many years, but ironically, I understand, that he had just started being active again. Dave suffered a heart attack back in August, I think, although it was sometime before I heard about it. He was 38-years-old.

Our sympathies are extended to his wife Hillary and family.

TEKPRO VISIT

On Thursday, September 3, about 24 people availed themselves of the opportunity to look over the Tekpro Division of Teknis. Tekpro manufacture high quality professional and military specification printed circuit boards. We saw computer controlled high-speed drilling and associated programming units and highly automated printing, screening, abrading, plating and solder reflowing equipment. It was a real eye-opener and it was not only the ammonia fumes that took the breath away!

I would like to thank Nev Cooper VK5ANC, who suggested the visit and 'squared' it with his boss Al (whose surname I forget, but his father has a "W" call sign!). Thanks to you both for a most interesting and enlightening evening.

SIR MARK OLIPHANT — HONORARY LIFE MEMBER

At the August meeting it was proposed by those present, on a recommendation from Council, that Sir Mark Oliphant be offered Honorary Life Membership for his services to radio science and allied branches of physics.

I am pleased to announce that Sir Mark has graciously accepted our offer and, as he has now moved to Canberra to live with his daughter, we will ask the VK1 Division if they would be willing to do the presentation for us.

Our other current Honorary Life Members are: George Luxon VK5RX, Geoff Taylor VK5TY, Brian Austin VK5CA, Rob Wilson VK5WA, Bob Murphy VK5MM, Colin Hurst VK5HI and Ian Hunt VK5QX.

DIARY DATES

November 7 —Adelaide Hills ARS Trash and Treasure Sale, Westbourne Park Memorial Hall, Goodwood Road, Westbourne Park (just south of Big W) from 10 am.

November 22 —WIA Picnic (probable date). Bridgewater Oval. Date unconfirmed at time of going to press, listen to Broadcasts for details.

November 24 —Monthly Meeting, Speaker Ray Dobson VK5DI, on the latest in radio modules that have been produced by Philips Industries. 7.45 pm.

November 26 —Old Timers' Luncheon, Woodville Oval. Details from George VK5RX.

December 8 —Christmas Social, Woodville Community Hall, 64c Woodville Road. Bring a mate (OM, YL etc) and a plate of supper.

Don't forget that there will be no meeting in January 1988 as it is Australia Day and there will be many Bicentennial Activities happening!

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VK3 WIA Notes

RESULTS OF VK3 DIVISION SURVEY

Following is the result of the VK3 Division Survey conducted in August, together with a letter of recommendation to the *Future of Amateur Radio Working Party*.

The response to the survey was excellent and the VK3 Council wishes to advise all members of what has been done with the final evaluation.

Attention — Chairman
"Future of Amateur Radio Working Party"

Manager — Regulations,
Radio Frequency Division,
Operations Branch — Department of Transport and Communications,
Belconnen, ACT. 2617.

1The Victorian Division of the Wireless Institute of Australia conducted a survey of Victorian amateurs during the month of August. Both members and non-members of the WIA were invited to participate. Survey papers were distributed to all members through the medium of AR magazine and made available on request to non-members through Club and Zone Secretaries, and from the Division Headquarters at Fitzroy.

2There were 547 completed and returned. Returned survey papers have been analysed and the overall result follows (Annex A). Returned papers are available for scrutiny if required.

3In accord with the wishes of the majority of amateurs who responded to the survey, the Victorian Division Council makes the following recommendations:

3:1Restructure of the current licence system to include an extension of privileges for novice class licence holders.

3:2Technical standards of the Amateur Service should be maintained, and the novice class licence should be considered as the basic minimum technical level for entry into the Service.

3:3It is highly desirable that all classes of amateurs have a common frequency allocation to allow communication and experimentation between licensees of different levels of technical expertise.

3:4Transmission of "data" should be permitted only by persons holding a LAOCP or AOCP qualification.

3:5Novice class licence holders should be granted VHF/UHF privileges and a "no code" class of novice licence introduced.

This licence to permit transmission only on allocated VHF/UHF frequencies. The frequency allocations should be such as to maximise use of existing allocated amateur bands, but not detract from the incentive to "upgrade."

3:6Novice class licence holders should not be granted operating privileges on the entire 144 and 148 MHz band, however it is desirable they be allocated a 150 kHz segment of the band and FM, SSB and CW should be permitted. The suggested frequency allocation is 145.000 to 145.050 MHz SSB and CW, and 145.050 to 145.150 MHz FM.

3:7Novice class licence holders should be permitted to operate on the six metre band SSB and CW. Suggested frequency allocation is 52.100 to 52.150 MHz.

3:8The amateur frequency allocation on the 70 centimetre band should be utilised more effectively, including the 70 centimetre repeater network. It is recommended that Novice class licence holders be permitted to use the FM mode only on frequencies 438 to 440 MHz and 433 to 435 MHz.

3:9The theory level of the novice examination should be investigated. If the standard is proved to have risen significantly in recent years, and is in fact higher than was originally intended as an appropriate base level for an introduction into amateur radio, it should be restored to that intended level.

4The Victorian Division makes no recommendation regarding the desirability of including questions on basic FM and VHF/UHF theory in future novice examinations, and relies on the recommendations of the "Future of Amateur Radio Working Party" in this regard.

5It is hoped the input from this Division will be given every consideration.

Yours faithfully,

(Signed) Barry Wilton VK3XV,
President.
September 14, 1987

ANNEX A
WIA Victorian Division Membership Survey Result

		YES	NO
SECTION A: COUNCIL INTERIM POLICY			
1A	Do you support the VK3 Council's "Interim Policy" as published?	252	295
SECTION B: LICENCE RESTRUCTURE			
1B	Is there a need for any restructuring of the Amateur Licence System?	431	114
2B	Would it be advantageous to have a licence of lower technical standard than the novice licence?	32	515
3B	Would you support the introduction of an additional licence class below LAOCP to allow novices data-mode privileges?	249	298
4B	Should a "no code" class of novice licence be introduced to allow holders to have VHF/UHF privileges only?	345	202
SECTION C: ADDITIONAL PRIVILEGES FOR NOVICES			
1C	Should novice licence holders be given VHF/UHF privileges?	432	114
2C	Do you agree with the 1987 WIA Federal Convention decision to recommend to DOTC that novices be allowed to operate on the entire 144-148 MHz band with full FM privileges?	80	467
3C	Should novices be given a frequency allocation that would allow all grades of amateurs to communicate?	426	118
4C	Should novice licence holders be allowed to operate on a portion of the 144-148 MHz band?	339	207
	FM	293	233
	SSB	233	286
	Data	198	325
5C	Should novice licence holders be allowed to operate on a segment of the six metre band?	387	160
	FM	368	177
	SSB	366	178
	Data mode	84	460
6C	Should novice licence holders be allowed to operate on a segment of the 70 centimetre band?	402	145
	FM	393	151
	SSB	112	432
	Data mode	109	435
SECTION D: JAPANESE RECIPROCAL LICENCES			
1D	Do you support the DOTC decision to allow Japanese Telephony Class licence holders a reciprocal licence which allows 10 W FM operation on all bands above 30 MHZ?	275	263
2D	Do you support the concept of allowing visiting Japanese Telephony Class licence holders a "Temporary Visitor's" licence for a specific period, eg 12 months?	394	145

NOTES

1.Amateurs who voted YES to question 1A were not required to answer all the questions.
The questions not requiring an answer were covered in the "Interim Policy."
A total of 252 YES answers to question 1A were received and have been added to the total votes recorded in other questions on the following basis.

1B YES	2B NO	4B YES
1C YES	2C NO	5C YES
5C FM YES	5C SSB YES	5C DATA NO
6C YES	6C FM YES	6C SSB NO
6C DATA NO		

2.It should be noted that in some instances not all questions were answered on a small number of returned papers. There were 33 replies regarded as invalid.

NEW MEMBERS

A warm welcome is extended to the following new members.

Donald Bainbridge VK3BDJ	Leopold
Manfred Bartz	Endeavour Hills
John Chambers VK3NYW	Seaford
Brian Fairess VK3NDP	East Brighton
Ian Godsil VK3DID	Parkdale
R M Johnson	Toorak
Alexander Kapko VK3XLI	East Brighton
Desmond Kealey VK3XHH	Montmorency
Bruce Leech VK3YIY	Sunbury
Hendrik Lodder VK3AXJ	Mount Waverley
Max Maujean 3B8BL	North Dandenong
Gino Nativo VK3XML	Brunswick
Julian O'Donnell	Doncaster
Bob Verstegen VK3KDZ	Endeavour Hills

er

VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

PRESENTATION

At the WIA Queensland Divisional Meeting on July 17, 1987, well-known Queensland amateur, Guy Minter VK4ZXZ, was awarded a merit badge and certificate by the Queensland Division for his services to the WIA and the Amateur Radio Service. The awards were presented on behalf of the Division by it's President, David Jerome VK4YAN. The Certificate read as follows:

Guy is a well-known and respected amateur and has been involved in Institute and amateur radio activities at all levels. His involvement has often been to the exclusion of all else; such is his dedication to the amateur service.

A brief outline of his amateur involvement follows:

—Joined the Townsville Amateur Radio Club in 1972.
—Joined the Gold Coast Radio Society in 1974 following a work transfer.
—Elected treasurer of that club the same year.
—Attended the first Radio Club Conference in 1976.
—Licensed as VK4ZXZ in 1979.
—Joined Council in 1979 and appointed Divisional Treasurer.
—In 1981, elected Divisional President. During his time as President he visited every radio club in Queensland at his own expense in his own time.
—Became Alternate Federal Councillor in 1982 and again in 1986.
—Chairman of 1982 Radio Club Conference.
—Appointed Federal Councillor in 1983. Also served on Federal Finance Sub- Committee.
—Awarded 75th Anniversary Medallion by Federal Executive.
—Represented Australia as an observer at the IARU Region 3 Conference in Auckland, 1985.
—Presently serving as Secretary to the Queensland Technical Advisory Committee.

Guy's one and only aim in performing these various tasks has been to seek the best for amateur radio and the WIA. He has been very capably supported by his wife, Anne VK4ANN, and he deserves recognition by this Division for his services rendered at all levels of Institute activity.

Judging by the reaction of those attending the meeting, the decision to make the award to Guy was a very popular one. When the award was proposed at a Council meeting about 10 days earlier, the Chairman found himself with the task of selecting from about 10 seconders to the motion. Congratulations, Guy!

Contributed by Ross Mutzelburg VK4IY, Federal Councillor

ALARA IN QUEENSLAND

After five years of representing ALARA in the State, Margaret VK4OE, has relinquished the position to Josie Gleadhill VK4VG. Queensland ladies are advised that their net will now be heard on 3.570 MHz at 0930 UTC.

It came as a pleasant surprise for my wife and VK4WIA newsreader, Bonnie, to be sponsored for ALARA membership by Val Rickaby VK4VR. Val is one of our State Divisional Councillors. Here, in Queensland, our ladies are very much to the fore in amateur radio.

WELCOME VISITOR AT COUNCIL

Members of the Divisional Council were pleased to have, as a guest, David Wardlaw VK3ADW, at the September Council Meeting. Discussions with David were very fruitful and both parties benefited greatly by our Federal President's visit.

David was on his way north to attend the North Queensland Radio Convention, in Townsville.

CENTRAL QUEENSLAND JOINT VENTURE

Gladstone and Rockhampton amateurs have co-operated to bring into operation a six-metre repeater site at Amy's Peak some 60 kilometres south-west of Gladstone.

The Central Queensland Branch of the WIAQ (Rockhampton) provided most of the equipment while the Gladstone Amateur Radio Club made available the site and attended to the licencing and administration. Amateurs from both centres assisted with the installation.

This six-metre repeater transmits on channel 3725 (53.725 MHz) and receives on Channel 2725, using the new Australian split of 1 MHz for six-metre FM repeaters. The aerial system is vertically polarised.

HISTORIC GYMPIE

Gympie Amateur Radio Club, have followed up their 1986 "Goldfest" by setting up an operating station and display in co-operation with the Gympie and District Historical Society.

VK4WIH, will operate from one of the museum buildings in the Society's complex in Lake Alford Park, on the southern outskirts of Gympie.

This Historical and Mining Museum has even more significance now as it is close to the major new deep mining development at Monkland, in the West of Scotland Shaft.

THE GOLD COAST AMATEUR RADIO AND HOBBIES FESTIVAL

It was, in past years, known as the Gold Coast Hamfest and has always been a very popular event. The theme of the event has now been expanded hence the name change.

The venue is still the same, the Albert Waterways Complex, Hooker Boulevard, Broad Beach, Gold Coast. Everyone is welcome on Saturday, November 14.

Bud Pounsett VK4QY

er

QSP

LICENCE FEES UP

The Department of Transport and Communication (DOTC) has increased its revenue obtained through radiocommunication licence fees by an average of seven percent.

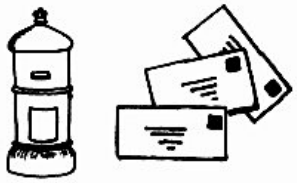
The amateur station fee, including repeaters and beacons has risen by $2 a years to $28.

Licence fees are reviewed each year as part of DOTC Federal Budget submissions.

A full list of the new radio communication licence fees, which are effective from December 1, 1987, is available from the Department's State branches and regional offices.

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

Over to You!



PROTEST

I wish to protest against novices using the two-metre band without the necessary qualifications.

It will not be long before we will be like the CB licence group, pay a fee to the Department, get some equipment and you are a full-blown amateur.

To the powers that be; take a running jump at yourselves and knock these silly ideas on the head.

Yours faithfully,

W S Lawson VK4ALC,
143 Greenslopes Street,
Cairns, Qld,4870.
ar

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CASUAL INTEREST

I have been taking a casual interest in the debate that has been going on about licence reform and have been motivated to write something, on the subject of attracting young people to amateur radio. I believe this is one of the aims of the restructuring issue that is being tossed around. By way of introduction, I am 16 and studying a fairly heavy Year 11 Mathematics/Science course. I have been a member of the WIA since late 1984 and studied for and obtained my full call last year.

On the subject of attracting young computer people to communications: there seems to be an incentive problem. Young computer people find satisfaction in programming and also see computers as a means of getting a good position in an expanding field at the forefront of technology. They see data communications as more beneficial to them in the end than radio communications, which plays no visible (to them) role in their envisaged future occupation (Yes, young people do take their future into account in the pursuit of hobbies).

If they knew that radio communications was also an expanding field at the forefront of technology (also more people going into computers so greater work prospects in radio fields!) their attitudes might be somewhat better. The problem is that the forefront of technology in radio is nowhere near as accessible as the forefront of technology in computers. Technology is trendy and amateur radio (one of the more accessible parts) is seen as a product of a past generation (ie shortwave and valve transmitters), and so is not as interesting. Things our parents would have been amazed by are passed off as "old hat". Our state-of-the-art transceivers are seen as glorified CB sets; nothing spectacular.

Amateur radio also has an image problem with the wider range of young people, those who may take up amateur radio for the communications experiences it offers (rather than technical experimentation). This is partially a result of the CB boom. The images of "truckies" and other exotic personalities are still hot in young people's minds, and imagination. Television promotion has given CB an attractive air of renegadery and excitement which amateur radio cannot match. When you say you are into radio, the first thing people want to know is do you talk to truckies, or can you let them have the mic so they can hassle the P-platers who hang out on the UHF channel 40 (even if you are using an IC-22S!)? When the purpose of amateur radio is explained, I am sure people get the impression that it is 'way above' them (except: my descriptions of WICEN activities I have been involved in receive more interest. Is it because people are interested in knowing how I came into contact with competitors?). Amateur radio (in my experience) does not attract that much attention amongst young people. For those interested in communication, CB is far easier.

Even if young people are aware of amateur radio, the prospects of many hours study and $ $ $ to get there are a little daunting (compared to the almost instant gratification of a computer). This is especially so for those with no prior electronics knowledge or introduction which might make them eager to experience amateur radio. I am sure though, that if people were given reason to be eager for amateur radio, then this would not be a hurdle at all. In relation to this subject, equipment is a problem, and by the time you can afford it personally, there is no time to use it (in between studies and performing the function as a social being). Home-brew is a possibility, but being mainly limited to CW, that aspect may remove much of the attractiveness in amateur radio.

Please do not confront me on that point. Although Morse is more satisfying, fast and efficient at the end, it is cumbersome and frightening at five words per minute, and phone for the beginner is almost painless and offers a wide range of experiences to be had at once (even if it is the 'lazy option'). The idea is to attract people.

I have gone on for long enough (there is more I can think of). Anyway, what I am getting at is that perhaps we are tackling this from the wrong angle. Licence changes are all very well but won't make all that much difference if no one is interested. If young people are to be aware of what amateur radio really is, and they need to have a good reason to enter it in terms of amateur radio's value to them.

You may be interested to know why I became on of the few Australian amateurs under 18 after all this. For a start I was interested in electronics and shortwave listening and so had good exposure to it (engineer uncle). I read lots of old magazines and became enthused, dreaming of DX and other enviable pursuits. I got the WIA novice course (excellent course) when 12, but did not do much until at a WIA meeting, the second I went to, where I was interrogated about why I wasn't studying for my licence. Les VK3BPW, told me I had half an hour after tea to do my Morse (big motivational problem). So from February 1986, I had half an hour after tea of Morse most days in the week, using the VK5 and VK2 Slow Morse Broadcasts (also excellent). In June I applied for the novice examination, being informed by Vic Pleugar, of DOC, (who gave lots of encouragement) that lessons were on in Swan Hill with Rex VK3OF, where the examination would be. I went to several of these, bought the ARRL Handbook, studied hard, applied for the AOCP and passed everything in October.

The point is, I had a reason to become an amateur. I wanted to become an electronics (communications) engineer, because I saw jobs and money there. I saw amateur radio as helping. Joining the WIA and going to meetings helped. I felt 'out of place' not having a licence, and not being able to talk to the people there on air (what were these repeater things? ? ?). Les took me on the Sea Lake Mallee Rallee with WICEN, and that helped — it is a very satisfying part of amateur radio. I did work experience with a commercial communications firm in Mildura. That helped.

I think few young people have, or have access to, half the motivation that I have had. Perhaps that is the problem we have attracting young people to amateur radio. I am sorry I cannot offer solutions, just explain some of the problems I have seen, in the hope that it will help put amateur radio on the correct road to recovery (I still want to be able to use my hard-earned licence in 40 years time, when I have time to).

Something I get a little angry about: Not so long ago in ARA and AR I read a letter putting over the attitude that "it is ridiculous that the AOCP can be passed by a 15 year old with ease."

To enlighten:

As far as I am aware, such a 15 year old at our local high school spends 25 hours a week learning, with at least an extra 10 hours per week after school doing the same thing. During a year, such a 15 year old will do dozens of one hour, short answer or multi-choice tests, essays and paragraph answers and six hours of maths above AOCP standard per week. At the end of each semester, most 15 year olds spend two to three weeks studying to be examined on the previous semester or years work, in up to 156 hours of examinations over four week-days.

Does it really surprise people with an attitude like this that such a 15 year old, with 11 years of solid learning behind him, should have less difficulty than they do passing the AOCP? Is not the AOCP failure rate, usually above 50 percent and set by mostly adult candidates, an indication of the difficulty of the AOCP? ? ?

Good Luck,

Yours sincerely,

Ben Jones VK3AKP (L30377),
PO Box 2,
Manangatang, Vic. 3546.
ar

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TECHNICAL CORRESPONDENCE

Permit me to differ with JH1FCZ about the two rings form of the 'Hentenna'. It was referred to in the 1978 edition of *Amateur Radio Techniques* by Pat Hawker G3VA, quoting Italian work published in 1965. Does Figure 4 format of the Hentenna have a figure of eight pattern? I have seen, somewhere, plots showing a sharp null on the line of the rod connecting radiating element (or should that read 'powered element') and ground, otherwise omni-directional radiation. As yet, Invalid Pensioner VK5KIC, has not found pennies enough to come up on two metres, six metres or 70 centimetres. G3VA, points out that the ground-plane should be metal, preferably copper or aluminium, its surfaces protected against corrosion, at least 25 percent larger than the powered ring, to pull the radiation down close to horizontal.

The Italian work referred to by Pat Hawker, was done on 500 MHz.

In his opening remarks he refers to the quad 'hoop' basically one wavelength in perimeter, and to the original Boyer (W6UYH) DDRR hula hoop, resonated to a quarter-wave by a capacitor at its free end. The Italian group, in 1965, pointed out that 'compared with the Boyer quarter-wavelength, "less known is the half-wavelength closed loop aerial which has a quite different, and in some ways, better performance." ' The half-wavelength form has an impedance close to 50 ohms for coaxial-connection point to vertical-to-earth-point angles of 20 to 160 degrees. The band width over that power-connection point range of angles ranges from close to three percent (if I guess values on the graph adequately) to about 15 percent. I tried very successfully, a skeleton-ground antenna like the one formatted in Figure 4, until it penetrated that polarisation was horizontal, and it is a pre-requisite that, in the Australian CBRS on that UHF band, that polarisation be vertical.

Further, I gather, that under the present CB regulations it is no longer permissible to use an aerial other than a Department of Communication Approved Type available commercially, at least for transmitting.

I did not realise the half-wave 'leaky wave-guide' aerial (I use Pat Hawker, probably on one occasion only, terminology) had been independently invented a few years later.

"Amateur radio techniques" refers . . . no it doesn't, that was in the Boyer quarter-wavelength

section . . to a model for 26.5 to 32 MHz 27" (685 mm) in diameter, standing 3½" (89 mm) above the roof of the car 'using the vehicle roof as a ground plane, which performed better than a quarter-wave'.

All book-learning; the financial and other limitations of an Invalid Pensioner have limited my possibilities of experimentation.

Yours sincerely,

Ian Crompton VK5KIC,
9 Craig Street,
Richmond, SA. 5033
ar

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COMMENTS FROM THE DARWIN AMATEUR RADIO CLUB RE NOVICE BANDS AND K-CALLS

After our August general meeting a discussion was held. The following is a resume of the outcome.

It is very apparent that there is a lot of claiming and counter claiming by people with vested interest going on amongst the membership of the WIA. We felt that it was about time that some members took a long hard look at their attitudes.

At the meeting we decided that a common band was mandatory to keep interest alive in amateur radio. It has become apparent that most of the experimenting is done by Z-calls on the VHF/UHF bands, and nowhere near as much is done in the lower HF bands. Isn't experimenting what our hobby is all about?

The novices have no way of contacting any Z-call holder because, let's face it, who likes to keep a noisy HF rig running all day and night so that N-calls can talk to them. It is a lot easier the other way. The novice can leave a rig running on the local repeater.

We felt that 70 centimetres would be better than two-metres because of the "crowding in the big smoke". But, really chaps, would it matter? The outcome was that on a VHF/UHF band there should be a common segment including repeater access 10 watts maximum output FM only. No RTTY, Packet, etc. This would give all classes a chance to chatter and organise things, maybe to the betterment of our hobby.

Now for a bigger bag of worms! What about the K-calls? I mean K-calls, not holders of both Z and N licences. (The combination came about to make regulation easier). Why, with their superior licence qualifications should they not be able to use RTTY, Packet, and other exotic modes within their licence frequency and power limitations/ allocations. Let's face it, they have the qualifications, but they have not demonstrated to DOTC the ability to modulate their eardrums to Morse at 10 WPM or more — that's all!

We believe that K-calls should be able to use all the modes they have shown their technical competence at (by examination) on all bands they are licensed for. There obviously needs to be more thinking done within this great organisation. Not committees to look at this and that because vested interests come to the fore and the only ones who come out of the woodwork are those who have an axe to grind. No one else is interested because they see this issue as a fait accompli.

The only way to find out what amateurs think is to hold a compulsory ballot of ALL amateurs. We realise that this is totally impractical. Nevertheless, some means of gauging all amateurs' responses (both members and non-members of the WIA) needs to be found and done.

Bill Murphy VK8ZWM,
President,
Darwin Amateur Radio Club.
ar

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THE JAPANESE NOVICES HAVE TWO-METRES, SO WE WANT IT TOO WE WANT A COMMON BAND, SO GIVE US TWO-METRES

Well, I have been told by various novices that they do not want to be given two-metres! They want to earn it, as a privilege of a Full Call.

Strikes me, this is just another example of big business out to make a dollar, selling novices two-metre equipment.

As for the Common Band — well, as must be abundantly clear to all, the problem can easily be resolved, by Limited Calls doing the 10 WPM Morse. It's that simple!

I have renewed my subscription to the WIA after a lapse of some years. Recent events prompted me to take this, as there are some aspects of current proposals I find disturbing, and indeed, foolish.

"Novices on two-metres". Harmless enough perhaps — in isolation. The complaining about "common band" — the suggestions of additional classes — beginners — computer — technician — and extra. Now, let's face it. All this started back in the 50s with the introduction of the "Z-Call". The thin edge of the wedge.

I have gone along with the concept — high tech fellow, who won't, or can't, associate with the rowdy conditions on HF — then there is CW. I just can't believe these clever people are incapable of mastering Morse. Of course they could do it.

Let's get amateur radio on its feet again. One Grade: Amateur. Full Call. You either are qualified or you are not. You share all bands — or none. Oh yes, as an introduction and stepping stone — the beginner's level — Novice. Nothing else. We will know where we stand. So will DOTC, and the radio clubs and the would-bes, and the rest of the World.

Let's face it — all this Bi-centenary nonsense — "200 years an established country" — and we still allow ourselves to be led by the nose from overseas — so childish.

So, let's phase out the limited — give them a couple of years to pass the 10 WPM and the K-calls — that must have been one of the best examples of muddled thinking for some years, followed by the present nonsense.

Well, that fixes that! Thanks to all the people who have spent many hours figuring out various grades and allocations, etc. It is nice to know the alternatives.

But, let's face it — the Novice Scheme was the greatest, let us keep it as is, and the AOCP Full Call.

Examinations — It seems so simple. DOTC sets the examination — the same one, all over the country, on a given day. The papers are sent to a trusted person — as in the past — eg the Postmaster. Under his direction, supervision is provided, and the completed papers returned to DOTC. Now, maybe DOTC do not wish to spend the time on marking papers — so couldn't they assemble random bundles of numbered answered sheets (no names or addresses) and have marking done by some reliable people outside the Department?

Beats me, why in this day and age, with multi-choice Q and As, and computers to scan the results, why all the fuss?

Oh, another thing. Some fool is suggesting a Second Body to — let's say "compete" with the WIA. If he'd get off his big arm chair and go chase up more support for the WIA and help us "get the bugs out", then perhaps he would earn some respect. Why do people want to destroy the system! Let's face it — the WIA is in a muddle — let's all pull our weight and squash the nonsense. Let's work for the following: AOCP and Novice. DOTC do Examinations. WIA and AMATEUR RADIO FOREVER!

73,

Jim Griffiths VK2BGG,
10 Anne Street,
Wauchope, NSW. 2446.
ar

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FREE LOADERS?

At the recent VTAC AGM the Victorian Division again attacked the so called free loaders of Institute owned/controlled repeaters, and like devices. They went on to say that non-members who use repeaters should at least contribute to the repeater fund.

This, to a certain extent, may sound fair enough. However, the Institute must understand that repeaters are, by law, open access! Before embarking on the provision of the various repeaters the Institute knew they would have to use only members' funds.

I have pointed out to the Institute on numerous occasions that they do little to encourage members . . . The Institute must "sell" its product! In the case of repeaters (and like devices), if it is necessary to attract funds, then the service must be "**sold**" to the users in as many ways as possible, this includes keeping everyone fully informed of the state of the devices, and the service.

From previous correspondence on the subject of keeping members fully informed, the Victorian Division seems to take the attitude that everything belongs to the committee, and what they decide has got nothing to do with the members! For example, how often has the Sunday morning broadcast contained a comprehensive status report? (should be weekly!). How often have members been left for weeks (months) guessing what is wrong with this or that repeater, or like device?

In contrast, those involved with ATV are provided with an excellent up-date service by Ron Harrison VK3AHJ. Ron makes a point of keeping everyone well informed on the ATV device/s status every Sunday morning. Consequently, the Melbourne ATV group has an excellent chance of attracting funds.

Yours sincerely,

Tony Tregale VK3QQ,
73 Nepean Street,
Watsonia, Vic. 3087.
ar

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GREAT CITIES LINKED

On Thursday, August 20, Melbourne packet radios stations linked their computers through a series of dedicated VHF repeaters to the National Capital, Canberra.

The combined technical expertise, dedication and efforts of the Melbourne and Albury/Wodonga packet radio groups finally made this major network link possible with the completion and installation of VK3RPN at Wodonga.

Data signals from Melbourne are lifted over the Great Dividing Range by VK3RPL, situated high in the Divide where it looks clear to the north over the Strathbogie Ranges and along the Goulburn Valley to VK3RPW, at Shepparton. This central Victorian packet repeater provides excellent coverage and is a vital mid-State link. The equipment is state-of-the-art, installed and maintained by one of the State;s finest radio clubs.

The Shepparton signals follow the general direction of the eastern section of the Midland Highway, passing north of Benalla and Wangaratta, arriving at VK3RPN, Wodonga, in good shape to travel interstate across the mighty Murray River to our friends in VK2.

The toughest part of the data highway is the job of VK3RPN, the long haul north-east over Albury to VK2WG-E, east of Wagga. The Wagga Amateur Radio Club maintains the efficient operation of this most important part of the data highway. VK2WG-1 is tasked with ensuring the packet signals avoid the massive Kosciusko Park, and have a clear run to Canberra.

The time taken for data signals to travel between the cities will depend on the level of traffic on the data highway. An average time for the return trip will be in the order of 10 seconds.

Victoria has opted for dedicated VHF packet repeaters to provide the coverage within the State. The main north-south trunk is complimented in the north-west by VK3RPM, at Bendigo. To the west, the Ballarat repeater is nearing completion.

The heavy Melbourne traffic is handled by VK3RPK and VK3RPA on 147.600 MHz, both stations dedicated to packet and in prime locations to cover the sprawling metropolis.

These days most home computers can be used for packet operation without any great difficulty. For many computers, a simple and inexpensive modem, program and radio is all that is required to allow full access to the fast growing packet radio facilities. A recent inexpensive modem design allows packet and line operation at the touch of a switch.

If you have a computer and a full or limited amateur radio licence, then packet will connect your two hobbies, and your computer to the outside world. However, don't despair if you have a novice licence or are a SWL, because just receiving packet can be great fun.

For more information on this fast growing aspect of amateur radio, contact VK3QQ, QTHR, or phone (03) 434 3810 or, write to the President, VK3AVE, Melbourne Packet Radio Group, Box 299, St Albans, Vic.

Tony Tregale VK3QQ,
73 Nepean Street,
Watsonia, Vic. 3087.
ar

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GOOD SHOW QUEENSLAND

Having listened to, and dealt with the VK4 News System on many occasions, I wholeheartedly agree with the comments by Bud VK4QY, in September AR.

The VK4 Broadcast system is a perfect example of the true amateur spirit of co-operation and product excellence . . . and all this with the lowest membership fee in the country!

Congratulations from the deep-south to everyone involved with one of Australia's finest news services. Keep up the good work, folks!

Yours sincerely,

Tony Tregale VK3QQ,
73 Nepean Street,
Watsonia, Vic. 3087.
ar

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UPON CHECKING. . .

Re my thoughts on Equal Temperament Tuning (Keyboard Instruments) which was published last month, upon checking my notes I find that I used Bottom A frequency instead of C (not that it makes a lot of difference).

The sentence therefore should read:

Since the frequency of bottom C is 32.703196 Hz, top C must be both 4186.0091 Hz and 4243.12 Hz which anomaly. . .

Heard some chatter on 40 today about the WIA. The sender said a bit an then remarked that he ought not to be criticising over the air, etc. I would have thought that it would be just the place to air any grievances. I, for one, would certainly like to be filled in on what the grievances are . . . it's not the first rime I've heard a bit of criticism. It might be an idea to have a committee 'discussion' with those who feel things are not going right after the Sunday broadcasts . . . or in a special column in AR so that these things can be aired instead of being allowed to fester.

One thing is for sure, we have to stick together.

Yours and 73,

Don Law VK2AIL,
RMB 626 Adelong Road,
Tumblong, Vic. 2729.
ar

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OTHER HOBBY

The accompanying photograph is of my other hobby . . . model ship building, a legacy no doubt inspired from my days as a ship's radio officer.

This model is the *Titanic* with two ships' clocks in the background.

Regards,

Bob Clifton VK5QJ,
4 West Terrace,
Beaumont, SA, 5066.
ar

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AERIALS — SOME PRACTICAL CONSIDERATIONS

I have a suggestion to add to the interesting and informative articles by Ted Roberts VK4QI. If you are buying PVC tubing to make strain insulators, get the amber coloured electrical conduit — it stands-up to Ultra-Violet better.

For those interested, the use of PVC conduit in direct sunlight is covered in Australian Standards Association — Wiring Rules. The specification is AS 2053 and the conduit is marked with the letter "T".

Yours faithfully,

Jack Peatfield VK5AF,
1 Filmer Avenue,
Glengowrie, SA. 5044.
ar

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OLD COMMUNICATIONS EQUIPMENT

Many amateurs would know of my efforts to collect, restore and write about old amateur and military communications equipment.

In the course of my research I am sometimes asked to assist with deceased estates, and find that very often the family do not have any idea of the value or importance of the deceased amateur's radio equipment.

To them it is a mystery or even a hindrance to settling their affairs, and consequently it is sold for little money or simply taken to the tip. I have known of modern equipment worth thousands being sold for just $50, and articles of significant historical value just dumped to clear the estate. In several cases, the widow has been in dire financial straits and obtaining a fair price for the equipment would have been of significant benefit to the family. It can be very sad and traumatic.

It seems incredible that we should not consider the inevitable, and spending time with the bereaved family of an amateur would make you realise what a simple but important task it is to list and value your equipment, and, of course, other important items, to help your family.

If you don't, I guarantee that your proud possessions and mementos will be discarded on the tip! Do you want that?

We all owe it to our families to, al least, indicate the disposition of our equipment if we pass away. And, don't put is off till you retire — you could be run over by a bus tomorrow.

Might I suggest that a **trusted** (and note the emphasis on trusted!) amateur friend or the WIA be enlisted to help sell modern equipment, and the WIA historians be given the opportunity to select items of historical interest, particularly documents, photographs, awards, etc. There are also collectors like myself who would appreciate and preserve vintage items that would otherwise have to be dumped, where they have little monetary value.

Please do it now!

Your sincerely,

Colin MacKinnon VK2DYM,
52 Mills Road,
Glenhaven, NSW. 2154.
ar

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OFF LIMITS?!?

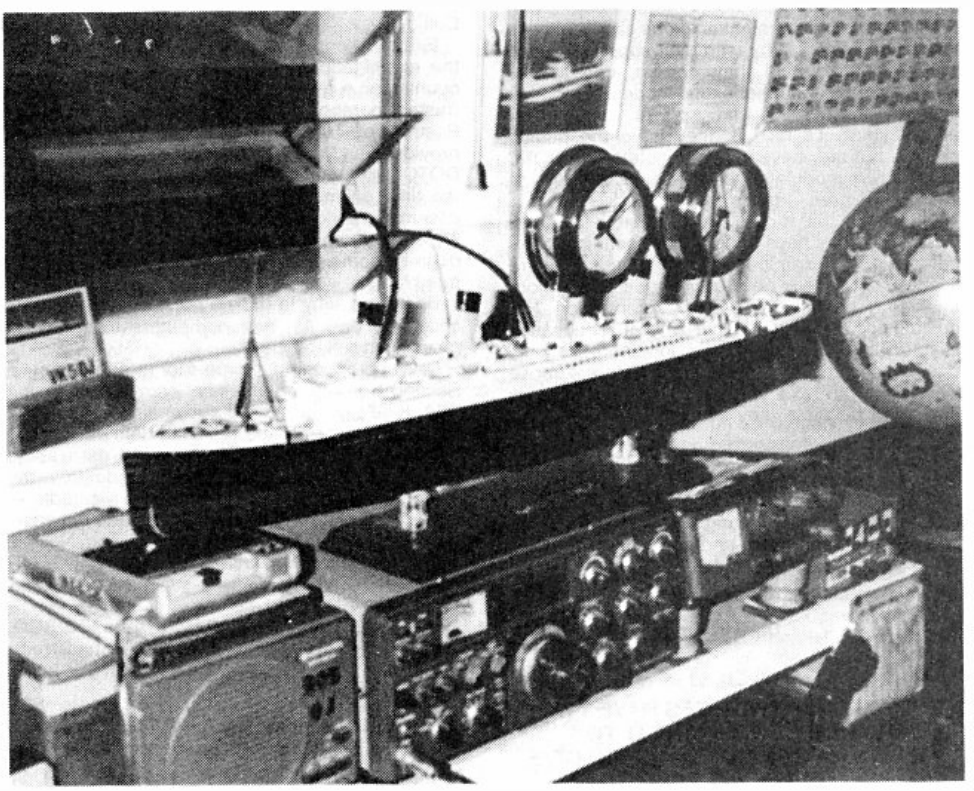
The article about the Catalina *Frigate Bird II* in AR for September 87, page 28-29, reminded me of the time I spent at Rathmines in January 1958, as an Air Training Corps member. The Frigate Bird II was hangared at Rathmines at the time, but was strictly off limits.

Just before I left, there was one heck of a ruckus because a group of RAAF Radio Apprentices from Wagga, also on camp, had vandalised the Cat and stolen the radio equipment. In the process they had severely damaged the aircraft.

I do note with some alarm that radio equipment donated to the Catalina project, and to other aircraft restoration efforts, will become inaccessible to the radio enthusiast and the public! The Catalina will hang under the ceiling of the Power House Museum, and the T1154/R1155, which at present makes a marvellous display next to the Lancaster at the Australian War Memorial is to be installed inside the aircraft, never to be seen again.

This is not right!

We are losing our chance to promote radio in our haste to help the aircraft enthusiasts. I will gladly donate some black painted biscuit tins to simulate the internal radio equipment (who is



going to know the difference?) so that the real radio equipment can be preserved and made available for display where we can see it!

Please think about it fellas, how can we promote the history of our hobby when we are effectively hiding it from view forever?

Yours sincerely,

Colin MacKinnon VK2DYM,
52 Mills Road,
Glenhaven, NSW. 2154.
ar

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PROVOCATIVE AND CAUSTIC

My letter objecting to the downgrading of *Amateur Radio* magazine (see September 1987, page 58) was deliberately provocative and caustic.

I was gratified to see so many other letters in the same issue, agreeing with my point, and in more gentlemanly terms.

I hope all members will read these letters and realise the importance of maintaining AR at the previous high standard. Already you can see the backward step taken by deleting the colour cover, and if a realistic view is not taken on costs, it will only deteriorate further.

I would like every member to write a two-line letter to the WIA stating simply:

1. I do not want AR downgraded.
2. I am prepared to pay a few dollars more to ensure that AR stays the best magazine I can get.

The letter from Bruce Kendall (same issue) pre-empted my next approach, and I agree with his concepts wholeheartedly.

You might think the WIA is in the business of providing services to members. Wrong! WIA and AR is all about marketing. We have a product and we need to convince the customer that he has to have it. (That is quite different to him ***needing*** it).

Let us examine what the product is and whether the customer perceives an overwhelming desire to have it. Is it a long list of all the services the WIA can provide? I hate to say it but the prospect will reply that the DOTC does what the politicians tell it to do anyway, who cares about Special Event Call Signs, and repeaters and beacons are there for all to use. Is it the bickering and dissension that pervades the hierarchy? Who needs that!

The one thing that he can get only by being a member is the AR magazine, so does the customer see value in that? Dare I say that AR is old-fashioned in appearance and layout. It doesn't really grab you does it? The front cover with its somber type style and lack-lustre colour reminds me of an obituary notice.

Sometimes I wonder if in trying to provide something for everyone, the end result is a bland porridge with little to turn the customer on at all. Often less is more, and perhaps we need to write less, print it in larger, more eye-catching type face and make sure it is a marketable product.

We need to critically examine each and every item printed in AR. Will each article and column attract customers, and will they look forward to each issue because they ***have*** to have it? Do we need to know the precise times and dates that Bill and Harry contacted each other 55 times three months ago, on the XX band? Do we need a Women's Weekly type column to learn that Ethyl and Harriet entertained 12 other old buddies to tea and scones? (WOW — that will get some affirmative action!)

Seriously, each columnist should keep in mind that he is marketing a product and not writing a new version of War and Peace.

A point that has not been covered and where I am sure we are missing a good bet is in marketing advertising to electronic companies. There is an excellent trade magazine called *What's New in Electronics* that is larger than AR, has heaps of colour, heaps of advertising, including effective marketing of advertising space. We need to be in there, marketing AR as an effective advertising tool to companies with an interest in our members.

If I appear to be critical of the make-up of AR, let me acknowledge that writing a monthly column and putting together such a complex magazine on a voluntary basis is a time consuming, frustrating and thankless task and those who do contribute to our magazine deserve our gratitude and admiration.

Yours sincerely,

Colin MacKinnon VK2DYM,
Marketing Director,
Brymac Pty Ltd,
52 Mills Road,
Glenhaven, NSW. 2154.
ar

Silent Keys

It is with deep regret we record the passing of —

MR G B THRUM	VK2CGT
MR ARTHUR SMITH	VK3UX
MR H N BOWMAN	VK5FM
MR R J FOXWELL	VK5ZEF

Obituary

ALBERT IRVIN KEITH CLARKE VK2IC

Albert Clarke was a man who has left his mark on society, his friends and the amateur fraternity.

With his great zest for life and irrepressible sense of humour, Albert enjoyed the respect and popularity that comes to very few.

His passing, in Mona Vale District Hospital on July 21, 1987, at the grand age of 90 years, occurred after a short illness.

Despite his age, and effects of being both wounded and gassed during war service in France with the 1st AIF, resulting in him being hospitalised in South Africa, Albert enjoyed surprisingly good health and activity until his final illness.

Wireless, as it was then known, attracted his interest and a desire to become one of those mysterious "hams" resulted in his Experimental Licence being granted in 1932 with the call sign VK2IC, which coincided with two of his initials.

After discharge from the 1st AIF, Albert settled in Fricourt Avenue, Earlwood, a location from where he became very well-known as a keen and successful DXer.

It was at that address I first met Albert who introduced me to the mysteries and delights of amateur radio. Who taught me how to grind crystals, how to build receivers and transmitters and encouraged me, as a young teenager, to get my own Experimental Licence in 1936.

Albert joined a group of local wireless enthusiasts who formed the Lakemba Radio Club. This club included such great DXers as Vince Cole, Harold Ackland, Charles Luckman, Bill Phelps, Vince Bennett, and Jack Pike, to name a few. For some years Albert taught Morse code to budding amateurs until the club closed down after the outbreak of World War II, in 1939.

Val, Albert's only child, being brought up in a home where wireless was a way of life, did not think it strange to have an amateur in her own home when she and Stan Bourke VK2EL, married. Suddenly there were two amateurs in the family!

Albert retired to a life of leisure in 1958 and, following his wife's death in 1976, decided to reside in the RSL Retirement Village, Narrabean. From such a location, high on the hill overlooking Narrabean Lakes and the Tasman Sea, Albert continued as an active amateur working DX right to the end.

Vale — Albert Irvin Keith Clarke, a fine man, good friend and a loss to the amateur ranks.

Geoff Bower VK2OI
ar

ARTHUR (ART) SMITH VK3UX

Well-known and respected DXer Art VK3UX, passed away peacefully in his sleep on September 6, aged 79.

Art, who gained his licence in the early 1930s, was a real experimenter. He built a multitude of equipment, learning more about the hobby with each successful project being completed. At the commencement of hostilities in 1939, he boxed his equipment, for despatch to a holding area, though for some reason it never left his premises. Nevertheless, it was officially sealed. When amateur transmissions were again permitted, Arthur was one of the first back on the bands.

Art was proud of his lifetime connection with the Victorian Railways, rising from his first position as a Porter, to that of Station Master at a number of stations prior to his retirement which enabled him to spend more time with his wife Agnes, fondly known to all as "Bobbie". Early in his retirement they enjoyed an overseas trip and each on their return resumed a common interest in the garden (being affectionately 'nick-named' Mr and Mrs Greenfingers, as they could and would propagate any plant) and an individual interest in painting and amateur radio.

Both made friends wherever they went and Art was a stalwart to the VK3UE, Australian Travellers, ANZA, Pacific DX and the South East Asia Nets, being net controller to each, on many occasions. His patience was rewarded by having worked nearly every country in the world, but none of his verifications were ever submitted for any certificates. Arthur's philosophy, was as he put it 'I know that they are in my log and are verified, I am satisfied.'

Another of his many interests was racing homing pigeons. Arthur, never shirked responsibility and he served the local club (becoming an Honorary Life Member) and the Victorian Association in various capacities in the office of President, Secretary and Treasurer, a sport with the same club that Australian Test cricketer Bill Lawry, indulged in, though at times as Arthur often remarked, '. . .race days clashed with his prowess with the bat and ball on the cricket field.'

Another of his pastimes was the Freemason Lodge, becoming a member of the Grand Lodge and reaching the position of Past Grand Sword Bearer.

Arthur suffered several heart attacks over a period of five years, the fourth one in 1979 being so severe when he suffered four Cardiac Arrests in six hours and he was later told that his life expectancy was about six months. Unfortunately shortly afterwards, Bobbie's premature death left a big void in his life, nevertheless, this gentleman's positive thinking extended his life for nearly eight years. Every minute was a bonus that he enjoyed spending with the hobby he loved, or talking about the achievements of his children, Ian (an engineer), David VK3ZSS (a research physicist at Cambridge University and presently a professor at the Phoenix University in Arizona) and Bette (a Hospital Scientist who did a tour of duty with World Vision on Hospital re-establishment in Kampuchea).

Art's articulate phone, CW transmissions and words of wisdom will be sadly missed from the HF bands by his many friends across all Continents. His scheds and propagation MUF trials with Bill ZL4AW and Andrew ZS2OM (a white cane operator) alone, would more than fill an average log book.

Sincere condolences to Ian, David and Bette, his daughter-in-laws Beth and Gwenneth, grandchildren Craig, Leigh and Kathy; Heather and Marion from the amateur fraternity, to whom he contributed so much.

Contributed by Ken McLachlan VK3AH and Gavin Douglas VK3YK on behalf of the members of the VK3UE Net
ar

MORE BROADCASTERS

The Federal Government will invite applications for 40 new public licences over the next seven years.

Transport and Communications Minister, Senator Gareth Evans, said 34 licences would go to community-wide radio stations.

The balance would cover special-interest areas such as ethnic, fine music, Aboriginal and sporting interests.

Australia already had 68 public radio stations on air, making it the growth area in broadcasting.

There were 138 commercial stations and 140 ABC and SBS stations.

DANGEROUS PHONE

A fluorescent telephone is a potential killer according to Telecom, which has banned it.

The *Fluorophone* is a clear plastic telephone which has a glowing coloured base powered by 240 volt mains power.

Consumer Affairs in Western Australia has already banned the phone and Telecom has refused to issue it with a permit, deeming it illegal to plug into a phone socket.

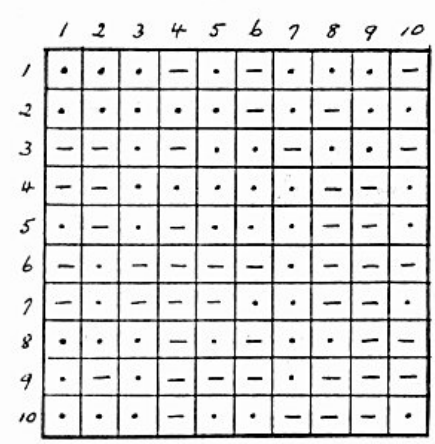
Telecom says the *Fluorophone* could send mains power down Telecom lines exposing technicians to a life-threatening hazard while working on telephone lines.

The phone's fragile fluorescent tubes could also be easily broken exposing householders to the lethal voltage.

SOLUTION TO MORSEWORD 8

Across: 1 street 2 seal 3 quit 4 zip 5 Alan 6 no no 7 noun 8 skew 9 roam 10 snag

Down: 1 impi 2 eager 3 seats 4 coo 5 hake 6 zap 7 fist 8 Roy 9 soot 10 king



PREDICTION CHARTS

Due to circumstances over which I have no control, and a physical condition which is causing me increasing concern, I am finding it increasingly difficult to continue to produce these charts.
With IPS offering (for a very reasonable charge) to prepare their *Grafex* computer produced predictions for individual users, perhaps it would be to your advantage to subscribe and have the latest information available for your personal use. Together with daily solar/geomagnetic reports, one should soon acquire a fairly intimate knowledge of what is going on around us with respect to propagation.

Propagation being such a variable phenomena, being "in the know" will be to your advantage in snaring the really elusive DX. A working knowledge of what is going on will provide you with an edge over those who don't.

Your comments on the value of these charts would be appreciated. Drop me a line with your views or suggestions before I make a final decision.

Perhaps there is someone who might take over if there is a demand.

73, Len Poynter VK3BYE

Solar Geophysical Summary

— JULY

SOLAR ACTIVITY

Solar activity was at low levels except for two days (24, 27) when M Class flares were observed. The sun was without spotted regions from the first to the fourth, sixth, and 11th to 14th. After the 16th, several regions started to grow rapidly and one of these produced the M Class flares observed on the 24th and 27th. By the end of the month there were still five spotted regions visible.

The growth of these regions during the month was associated with a steep rise in the value of the 10 cm solar flux. This peaked at 112 on 23rd. This is the highest flux value observed since June 15, 1984.

The monthly averaged sunspot number for the month was 33.0, the third value over 30 in the past four months. The yearly averaged sunspot number for January 1987 was 17.5, and a steep rise from the solar minimum value of 12.4 observed for September 1986. This steep rise suggests that the new solar cycle (number 22) could be a strong solar cycle.

GEOMAGNETIC ACTIVITY

The level of geomagnetic disturbances increased during the month with two significant disturbances. The most severs disturbance was that observed on the 28th, A-24 and 29th, A = 36, when the field was at major storm levels at times. This disturbance is thought to have been associated with earlier solar flare activity.

Daily Solar Terrestrial Reports — WWV each hour plus 18 minutes.
Propagation Summaries — Radio Australia, 0425, 0825, 1225, 1625, 2025 UTC.
IPS Telephone Recorded Message — on (02) 269 8614.

—From data supplied by the Department of Administrative Services, IPS Radio and Space Services, Sydney

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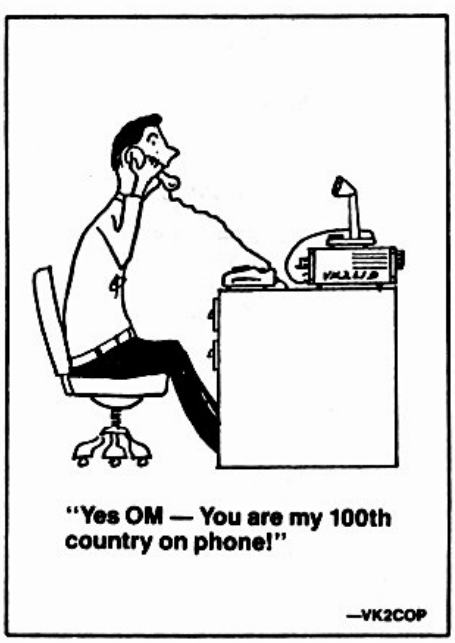
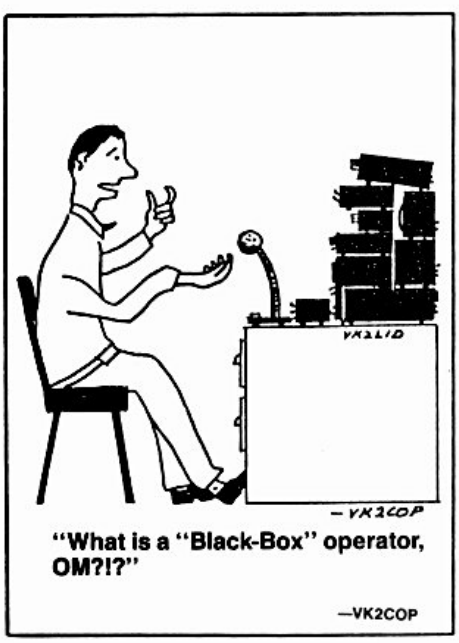


"Yes OM — You are my 100th country on phone!"

—VK2COP



"What is a "Black-Box" operator, OM?!?"

—VK2COP

DEADLINE

All copy for inclusion in the **January 1988** issue of *Amateur Radio,* including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162,** at the latest, by **9 am, November 9, 1987.**

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write ***each*** on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
$22.50 for four lines, plus $2.00 per line (or part thereof)
Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office . . . 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

EXCHANGE — NSW

HAZELTINE MODEL 2000 COMPUTER TERMINAL: in good working order to exchange for Video Monitor, suitable for Microbee, or sell for $200 ONO. Also, Yaesu FT-290R or Trio TR-7950 (like Kenwood TR-7950) to exchange for IC-02AT, IC-04AT, FT-23R, FT-73R, or AR-2001. Lew VK2ZIP. Phone (02) 467 6733/6738 9.30 am — 6.00 pm Mon-Fri.

FOR TENDER — VIC

DECEASED ESTATE: Tenders are invited for each or all of the following equipment — by November 11, 1987. (1) One 9-15m *Nally* wind-up, fold-over tower complete with TH6DXX 10, 15 & 20m beam, CDE HD Rotator and controller, Balun, Drake 3300 LP Filter and Coaxial cable. Tower Computations available. As is/where is and to be removed by the successful tenderer. (2) One Yaesu FTDX-400 tcvr S No 584454, SWR Meter, with spare valves, Astatic D104 Mic, owners manual, Heathkit Dummy Load, HB Antenna Tuner and HB clock. (3) One Yaesu FTDX-400 tcvr S No 805425. Extras to each successful tenderer. Items 2 and 3 Licenced Amateurs only please. For further details and inspection please ring (03) 221 6594 AH.

WANTED — NSW

AEA MORSEMATIC MM-2 KEYER: preferably with memory expansion. New or near new condition. VK2BRC, QTHR. Ph: (063) 65 3123.

HF MOBILE TRANSCEIVER: Consider any brand, any age, fully transistorised model. Minimum 20 and 40 metres. Ring VK2AZT with price and condition. Ph: (069) 42 1392.

LINE OUTPUT TFMR FOR HMV OBERON: Model V6-9D B&W TV (Part No 9080771) new or used. Large single winding for 25 inch screen, has 9 lugs (6 & 3) & cap. VK2AFU, QTHR. Ph: (02) 53 5774 or (047) 82 1617.

RACK: 19 inch rack to suit old-style equipment. Must be able to support 100 kg weight. John VK2DVW, QTHR. Ph: (02) 57 6567 AH.

VIBROPLEX KEY: or electronic keyer. Al VK2AXR, QTHR. Ph: (02) 477 6275 or 477 4947.

WANG PC: Preferably with a hard drive, floppy drive, monitor & keyboard. Gareth VK2ANF. Ph: (02) 427 5090 anytime.

YAESU YM-38 & YD-148: Golf ball on goose-neck desk mics. Bob VK2CAN. Ph: (02) 46 3727.

WANTED — VIC

DC POWER SUPPLY: for FT-200/250. Bill VK3CB. Ph: (03) 241 4154.

QSL CARDS: of any description. Pre-war, rare DX and QSLs of artistic design especially appreciated. These are wanted urgently for the WIA (Vic Div) QSL collection now being established. Please contact the Hon Curator, Ken VK3TL, on (059) 64 3721 and arrangements will be made to pick up the cards whether you live in Melbourne or in the country. You can also leave QSLs at the WIA rooms in Fitzroy. Please help us make it a really fine collection.

SPLIT STATOR CONDENSER: Ceramic ends approx 1¼" x 1¼" about 4 stator, 3 rotor plates per section. VK3FT QTHR.

TV TRANSMITTER & MODULATOR: for self-help broadcasting of signals from AUSSAT as I want to transmit on band 5 UHF with about one watt output. Gil VK3CQ, QTHR.

WANTED — QLD

CIRCUITS: for WWII Wavemeter Class D No1 Mk2. James Knight frequency standard FS344 (USA). UZ12C (19) tube for YT189 (JA Navy) tcvr. Details of metal octal tube MC804 used in Type 17-13118 (JA) WWII aircraft rec. Appreciate help. VK4EF, QTHR. Ph: (07) 366 1803 AH.

DUPLEXER: consisting of 6 cavities if possible, to suit two metre repeaters. Darling Downs Radio Club. Ph: (076) 35 2735 or (076) 34 4276 AH.

IC730, 735, 751 or KENWOOD TS-130SE: Required in good condition. Details to John VK4SZ, QTHR. Ph: (070) 61 3286.

INFO & CIRCUIT FOR TECH MODEL TE-15 GRID DIP OSCILLATOR: Also copy of book by Edward Noll W3FQJ. 73 Vertical Beam & Triangular Antennas. Will pay costs. Fred VK4NMA, QTHR. Ph: (07) 396 3521.

WANTED — TAS

HF LINEAR AMPLIFIER: Capable of 400 watts on 80, 40, 20. Will consider commercial or home-brew. Going, or in need of repair. Particulars to Bob VK7KZ, QTHR. Ph: (002) 34 9780 from 6 pm onwards, weekdays or weekend.

FOR SALE — ACT

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

FOR SALE — NSW

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

NEW AUTO SCANNING RX: FM 76 to 108k, AM, SSB, CW 154 to 30 MHz. $295. New Walkman Sport. AM, FM & Cassette player. $195. Valves (8) Type 813. All okay, $25 each. Al VK2AXR, QTHR. Ph: (02) 477 6275 or 477 4947.

CODEMASTER CW610 CW, RTTY, ASCII, DECODER: Morse practice $170. Emtronics noise bridge ENB1 $90. Part assembled PCBs ETI 725 $20. ETI 446 $10. AR 1975 B/Blocks ABCD $lot. VK2KSD, QTHR. Ph: (02) 456 1577.

MECHANICAL TTY SELLOUT: 2 Model 15s, Model 14 typing reperf, tape reader, RS232.TTL interface manuals. $50 ONO. VK2AEJ. Ph: (02) 92 4025.

SHACK CLEARANCE: Azden PCS-2800 10m FM, Belcom LA-106 2m amp (needs repair). Belcom LS-202E 2m H/H. Icom IC-4E 70 cm H/H. Kenwood TM-401A 70cm FM. Microwave modules MMT 28/144 2m to 10m xvtr. Tokyo Hy-Power HL-32V 2m amp. Yaesu FT-203R 2m H/H. Pearce Simpson Leopard MkII UHF CB. Dick Smith VZ-200 & RTTY module. Colin VK2COL. Ph: (068) 42 2305.

TRANSMITTER/POWER SUPPLY: parts in cabinet. Originally 10kV, 1-2A C-V, C-I power supply, 3-phase input. Includes Eimac 3CW5000 H3 tube, all transformers, fan, control circuits, metering, rectifiers. $4000 ONO. Contact C Horwitz. Ph: (02) 697 4027 BH.

TRANSVERTER: Microwave modules MMT-432/285. The cheapest way to 70 cm all-mode. Perfect condition, little use. $270. Larry VK2EOY. Ph: (02) 949 3124.

TRIBAND BEAM TH3MK3: Complete with KR-400 rotator, controller & tilt-over pipe mast. $350 ONO. George VK2OH, QTHR. Ph: (02) 771 3116.

YAESU FT-207R 2 METRE HANDHELD: 144-148 MHz, with two 12 volt car cradles, earphone, charger, reasonably new rechargable battery. $250. 28 MHz handheld transceiver with crystals, rechargable battery. $40. Gareth VK2ANF. Ph: (02) 427 5090 anytime.

FOR SALE — VIC

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

COMMUNICATIONS RECEIVER: Icom ICR-71A. Original packing and handbook. $700. Bob VK3AQK, QTHR. Ph: (057) 44 1676.

DIAWA ROTATOR 7600R: Heavy duty with round controller. Brand new, never used. $450. Shortwave frequency directory, World-wide edition. $20. All Werner Wulf beams, 3 el-20m, $150. 3 el 10-15m duobander. $140. 6 el 6m $100. 2 x 9 el 2m beams $55. All in VG condition, prices negotiable. Must sell. Contact Steve VK3DQL, QTHR. Ph: (050) 37 2391.

HEATHKIT REGULATED POWER SUPPLY: Model IP-2715 13.8 volts (adjustable) 20 amps. Fully metered. $300. VK3VF, QTHR. Ph: (059) 75 1475.

ICOM IC-720A: $725. Also complete Drake station of well-known DXer T-4X Tx, R-4B Rx, matching spkr/pwr sup, speech processor. Ameco preamp PCL-P, RFE 100 Digital readout, many spare tubes for Tx & Rx. $850. Bill VK3WK, QTHR. Ph: (055) 67 1048.

JRC HF TRANSCEIVER: Model JST-100D, all solid state 100W plus tcvr, incl all WARC bands, With NBD-500G, 20A peak fully regulated power supply. NFG-97 antenna tuner & NVA-88 extension speaker & Voicecraft desk mic. All matching equipment with many features incl manual & original cartons. Suit new equipment buyer. All in excellent condition, beautiful performer. $2300 ONO. Prefer not to separate. Paul VK3CGR. Ph: (03) 359 1450.

SHACK CLEANOUT: Lifetime collection includes variable capacitors for transmit, linears, ATUs, also for receivers & instruments. Hy Power Supply incl reg screen supply. Heavy duty HV, chokes & transformers. AWA carphone W/xtals. Cabinets, meters & many more unavailable parts & hardware items. Inspect by appt, SSAE for list. VK3ZB, QTHR. Ph: (03) 459 8365.

TRIO CO-1504 OSCILLOSCOPE: Perfect condition. Ideal general purpose trouble shooting unit or as deluxe station monitor-scope. Price $200 ONO. Robot 800C RTTY/CW TU with HF/VHF tones & split-screen video. Multiple baud rates. Centronics printer port or teleprinter loop. Price $200 including Siemens T100 at no extra cost. VK3IH, QTHR. PH: (03) 584 1610.

YAESU FT-101E TRANSCEIVER: Fair condition with mic, book. $100. Drake r/l filter TV-3300-LP $30. Ant tuner EAT-300 $40. H/b dig freq meter 0-50 MHz $30. Junk box Rs, Cs, transistors, etc, bound AR magazines 1972-1987 given away free. Harry VK3AVQ, QTHR. Ph: (056) 74 1110.

YAESU YO-901 MULTISCOPE: with instruction book hardly used. $300. VK3DND. Ph: (051) 57 0236 or Vic Lonsdale, Tambo Crossing, Vic. 3893.

FOR SALE — QLD

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

FOR SALE — SA

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

CW TX: 3PS, 6V6 (osc), 6V6 (doub), 6V6 (doub), 807 (PA drive), all on one panel. Upper panel 829B final, 160m to 6m. Tx tubes — 4-65A, QE3-300, 4E27, 815, 829B & socket, VCR 139 & S. 5 Vintage radios B/C Grundig Reel to Reel Recorder. Please submit your tender by mail. VK5LC, QTHR. Ph: (08) 271 6841.

FOR SALE — WA

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

PAIR OF 813 VALVES: with sockets $80. Crystal filter 9 MHz SSB with both carrier crystals. $50. Panel meter 2½" 1 mA $10. John Kitchin VK6TU, QTHR. Ph: (09) 349 9342.

FOR SALE — TAS

BUILDING BLOCK MODULES: PCBs & Kits of components. Contact the Secretary, Frankston and Mornington Peninsula ARC, PO Box 38, Frankston, Vic. 3199.

YAESU FRG-9600 VHF-UHF ALL MODE SCANNING RECEIVER: with PRG-965 HF converter to provide 500 kHz-905 MHz continuous coverage, $900. Also Saiko SC-7000 VHF-UHF 70 channel AM/FM scanner. $425. Arnie VK7KR. Ph: (002) 71 7599 BH.

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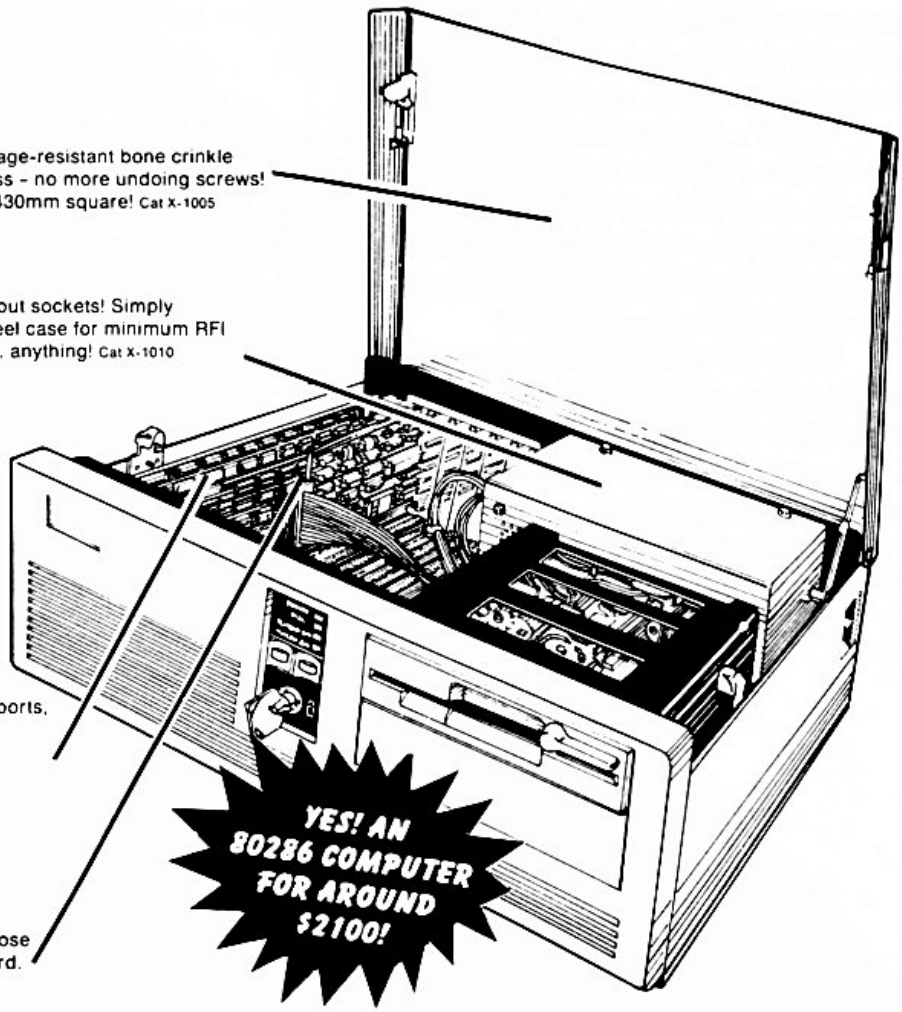
BUILD-IT-YOURSELF 'AT' COMPUTER!

At last! The perfect opportunity for the hobbyist to build the perfect computer. . . Perfect because it has in it what YOU want! All the features of the "AT" - blinding speed, high expandability, and so on - but you put it together yourself - and $ave!

There's more: each board or module comes with a full 12 month warranty PLUS individual, professionally prepared manuals - no Jinglish to decipher!

And best of all, you don't have to buy it in one hit: add what you want, when you want it (and when the pocket allows it!)

Look at the features:



SUPERB QUALITY HINGED CASE

"Baby AT" case in heavy gauge steel, heavily covered in damage-resistant bone crinkle finish. The lid is hinged and locks up for instant internal access - no more undoing screws! Large enough for expansion - but features a footprint of just 430mm square! Cat X-1005

ONLY $175

200W POWER SUPPLY

Completely pre-assembled - even to the on/off switch and input sockets! Simply slots into place in cutouts provided in case. Heavily plated steel case for minimum RFI with integral whisper-quiet fan. 200W capacity is ready for . . . anything! Cat X-1010

ONLY $275

"BABY AT" MOTHERBOARD

Again, completely pre-assembled. No risk of dry joints - you just connect appropriate cables (as described in detailed manual included). On-board capacity for 1Mb RAM and 8 slots for expansion in true"AT" format. Offers 6, 8, 10 & 12MHz speed (switch & software selectable) giving outstanding software compatability PLUS blinding speed when you need it, and time & date memory with battery back-up. Cat X-1000 **JUST $995**

PLUG-IN CARDS

Cards for the various graphic standards, printer ports, serial ports, etc etc. Choose the one that suits your requirements - and remember, you can always upgrade later!

CGA plus Parallel Printer Card Cat X-2010 **$129**
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Your choice of hard/floppy or floppy disk controller card: choose the one that suits your needs best. Both plug in to motherboard.

Floppy Controller (2 disk drives) Cat X-2014 **$129**

Hard/Floppy Controller (2 of each) Cat X-2008 **$399**

DISK DRIVES

Also include appropriate cables.

1.2Mb Floppy Disk Drive Cat X-2014 **$269**

20Mb Hard Disk Drive Cat X-2201 **$795**

(Other higher capacity Hard Disks available if required)

KEYBOARDS

Two types available:
84 Keys with top quality "Alps" keyswitches Cat X-3820 **$129.00**
101 Keys - with numeric keypad Cat X-3821 **$149.00**

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PTY LTD

DSEB450/RT1087

BAD NEWS FOR ANYONE WHO EXPECTED BIG THINGS FROM ICOM.

The biggest news in hand held transceivers is actually very, very small.

It's the new generation ICOM IC-μ4AT and its midget twin, the IC-μ2A.

Both pack all the performance and reliability you expect from ICOM into a tiny package. And although they weigh next to nothing, they're not light-on for features, as you'll see.

The IC-μ4AT has built-in power saver circuitry that uses as little as 8 mA of current flow during standby. So it will last up to four times longer than some older equipment. Yet it measures only 58mm wide by 140mm high by 29mm deep with optional BP-22 battery pack.

It also has a DTMF pad, 10 memory channels with convenient digit up/down switches, subaudible tone encoder, and a comprehensive LCD display with special backlighting that turns off when not being used.

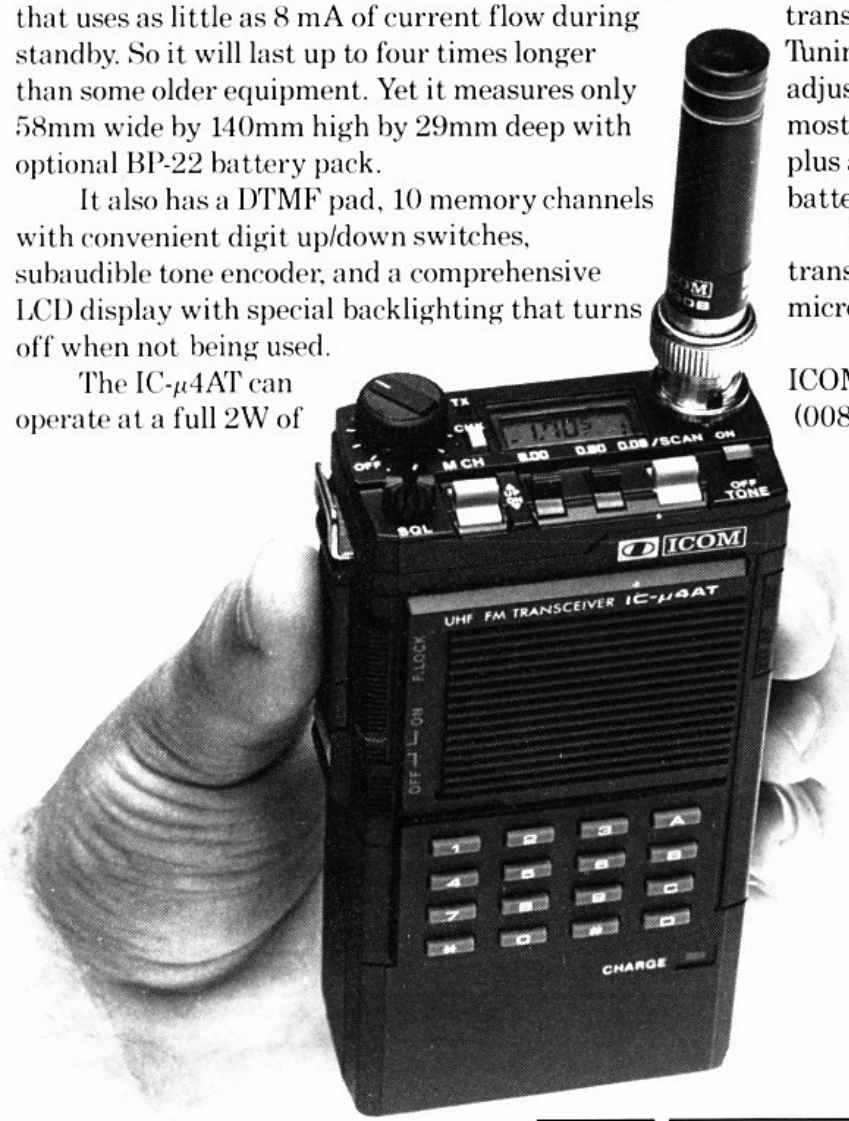
The IC-μ4AT can operate at a full 2W of output power from the optional BP-24 or optional converter with 12V battery. And its durability makes it ideal for operating in rugged outdoor environments.

The IC-μ2A also has 10 memory channels and the top panel LCD for easy readability and puts out up to 2.6W of output power from the BP-24 battery pack.

Like its counterpart, this 2 metre transceiver features Digital Touchstep Tuning for fast shirt-pocket frequency adjustments. And of course, both can use most existing ICOM hand held accessories plus a new line of long life nicad battery packs.

So if you want big things from a small transceiver, get your hands on the ICOM micros soon.

For details of your local dealer phone ICOM on Melbourne (03) 529 7582 or (008) 33 8915 from elsewhere in Australia.



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